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History of Agriculture in the Northern United States 1620-1860

BY

PERCY WELLS BIDWELL, PH. D.

ECONOMIST, UNITED STATES TARIFF COMMISSION

FORMERLY

ASSISTANT PROFESSOR OF ECONOMICS, YALE UNIVERSITY

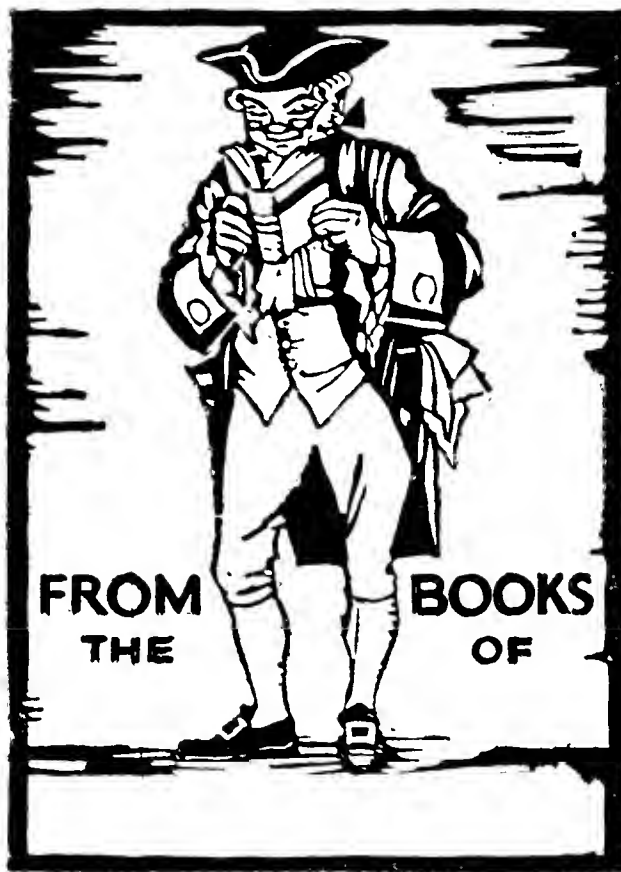
AND

JOHN I. FALCONER, PH. D.

PROFESSOR OF RURAL ECONOMY, OHIO STATE UNIVERSITY



PUBLISHED BY THE CARNEGIE INSTITUTION OF WASHINGTON
WASHINGTON, MAY, 1925



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*To my teachers J. P. Boyer
and friend Mr. J. P. Boyer*

BY

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My thoughts always go back to my best teachers. So, after having this book given to me--I at once thought of You.

It will be of little advantage in your teaching. Although I found it interesting to read.

School is becoming more, more deep.

Tell Mrs Deyoe HELLO.

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INTRODUCTORY NOTE.

This volume forms a part of the Contributions to American Economic History projected by the Department of Economics and Sociology of the Carnegie Institution of Washington in 1904, and is the fifth study to be published. It has been preceded by the History of Domestic and Foreign Commerce by Professor Johnson and colleagues, 1915; the History of Manufactures from 1607 to 1860 by Dr. Victor S. Clark, 1916; the History of Transportation to 1860, prepared under the direction of Dr. B. H. Meyer, 1917; and the History of Labor by Professor John R. Commons and collaborators, 1918.

The direction of the Division of Agriculture was originally entrusted to Dr. Kenyon L. Butterfield, then president of the Rhode Island College of Agriculture, and later president of the Massachusetts Agricultural College. He prepared a syllabus of the work, and arranged with a number of scholars to treat the topics which he had outlined, but, owing to the many demands for public service made upon his time, he was unable to carry the plan to completion. A considerable amount of preparatory work was, however, done, especially under Dr. Henry C. Taylor, then chairman of the Department of Agricultural Economics of the University of Wisconsin. He projected the plan of preparing the series of dot maps showing the expansion of American agriculture, selected much of the material, and supervised the preparation of the text. He personally went through, page by page, the volumes of *The Cultivator* and *The Country Gentleman* from 1840 to 1865 and extracted such excerpts as contributed toward the story as presented in this volume. During the same time, J. L. Coulter and A. E. Cance, who were then graduate students in the University of Wisconsin, gave considerable time to this task and gathered from various sources much material which was subsequently used. O. E. Baker and O. C. Stine also contributed in various ways to the collection of material for this part of the volume. Owing to the many delays caused by other tasks, special arrangements were made in the spring of 1913 with J. I. Falconer, then a graduate student at the University of Wisconsin, to devote his entire time to the gathering of additional material and to the preparation of the manuscript for the period 1840-1860. In the present work Professor Falconer contributes Part IV, *The Period of Transformation* (pages 259-453). Professor Taylor also secured the preparation of an exhaustive study of the southern plantation down to 1860 by Dr. L. C. Gray.

Upon the discontinuance of the Department of Economics and Sociology in 1916, and the reorganization of those who had been collaborating in its work as the Board of Research Associates in American Economic History, Professor Taylor was asked to take charge of the History of Agriculture in the place of President Butterfield, who desired to be relieved on account of the pressure of other duties. A number of circumstances soon made it desirable to change the general plan of the work. Professor Taylor was in 1919 appointed Chief of the Office of Farm Management in the Department of Agriculture in Washington, and subsequently Chief of the Bureau of Agricultural Economics. This bureau has been gathering a large quantity of material regarding the development of agriculture in the United States since 1860, and has much

greater resources for this kind of work than could be commanded by a volunteer group. The material for the period prior to the Civil War is, however, not so voluminous. Moreover, in more ways than one the Civil War and the abolition of slavery marked a turning point in the history of agriculture, as in the whole economic life of the nation. Therefore it was decided to limit the work of the Research Associates to the period prior to 1860, and to treat this period under the two natural divisions of the South and the North.

The history of southern agriculture was already well covered in manuscript by Dr. Gray in his *History of the Southern Plantation*. He was, accordingly, asked to condense and revise this monograph, while Dr. Percy W. Bidwell, then Assistant Professor of Economics at Yale, was invited to prepare the *History of Northern Agriculture to 1840* (Parts I-III, pages 1-257 in the present work). Dr. Bidwell was well qualified for his task by the work which he had already done in the history of New England agriculture, and spent over a year, from 1922 to 1923, in Washington working upon the material in the Library of Congress and in the Department of Agriculture. He has since edited the Falconer manuscript so as to merge the two studies into a consistent history with continuous chapter numbers and has prepared the bibliography.

Although Dr. Bidwell did his work with great care, it was thought wise to reduce possible inaccuracies to a minimum by having the references checked independently by experts in the Department of Agriculture. This work was done under the direction of Mr. Donald Jackson by Miss Esther K. Thompson in the Division of Statistical and Historical Research of the Bureau of Agricultural Economics. We are much indebted to these scholars for their careful work, as well as to Dr. Taylor for undertaking the general direction of the entire study.

HENRY W. FARNAM.

NEW HAVEN, CONN., May, 1925.

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A History of Northern Agriculture
1620 to 1840

BY

PERCY WELLS BIDWELL, PH. D.

PART I
AGRICULTURE IN THE EARLIEST
SETTLEMENTS

CHAPTER I.—FIELD HUSBANDRY IN THE EARLIEST SETTLEMENTS.

DEPENDENCE ON NATURAL FOOD RESOURCES.

The earliest efforts of the colonists to get a living in the New World could hardly be classed as agriculture. They resembled rather the activities of primitive tribes on the hunting or collection stage of societal evolution. In all the earliest settlements, and particularly in the ill-equipped Plymouth Colony, the indigenous plants and the wild animals were largely relied upon as food resources until the first crops could be harvested. The natural food resources of the Atlantic Coastal Plain were varied and abundant. Berries of many kinds flourished in profusion; blackberries, raspberries, huckleberries, gooseberries, cranberries, and, perhaps most acceptable of all, wild strawberries. Roger Williams remarked that the wild strawberries were the best of all natural fruits in Rhode Island, adding: "In some parts where the Natives have planted, I have many times seen as many as would fill a good ship within a few miles compasse;" ¹

In June they were so plentiful, says Denton,² "that the Fields and Woods are died red." Wild cherries and wild grapes and crabapples were to be had for the picking, not very appetizing according to our present ideas, but evidently acceptable to the hungry settlers. In the woods they found nuts and roots; in New England the so-called groundnuts, the tubers on the roots of the *Apios tuberosa*, are frequently mentioned; in New Jersey and Delaware some use was made of the tuckahoe, a large, globular, underground food plant.

But the earliest settlers were not restricted to a vegetarian diet; the woods and waters abounded with a variety of game and fish. There were partridges, turkeys, and pigeons, the latter often in incredible numbers. Van der Donck³ refers to the astonishing plenty of wild pigeons:

"Those are most numerous in the spring and fall of the year, when they are seen in such numbers in flocks that they resemble the clouds in the heavens, and obstruct the rays of the sun. Many of those birds are shot in the spring and fall, on the wing, and from the dry trees whereon they prefer to alight, and will sit in great numbers to see around them, from which they are easily shot. Many are also shot on the ground, and it is not uncommon to kill twenty-five or more at a time."

Wild geese and ducks were plentiful, and often by killing a deer a supply of red meat was procured. The fish taken from the ocean and streams were supplemented by shellfish, particularly clams and oysters.

But in the midst of this seeming plenty the colonists were often on the verge of starvation. Reversion to a stage of civilization which the race had outgrown a thousand years ago was not easy. They were too "civilized" to get a living from the woods, the shore, and the streams with as little effort

¹ *Key to the Indian Language*, in R. I. Hist. Soc. Collections, I, 90.

² *Brief Description of New York* (1670), p. 4.

³ In N. Y. Hist. Soc. Collections, 2d series, I, 173.

as the Indians. Moreover, it is probable that a prejudice against fish and game diet prevented the colonists making use of the wild food until actually starved into it; and besides, they were not skilled woodsmen. As Channing⁴ remarks of the Pilgrims:

"In those days, middle class Englishmen knew little of sport. In England and in Holland, not one of them probably had ever gone in pursuit of a wild animal, and few, if any had ever caught a fish."⁵

THE FIRST HOUSES.

Before much attention could be given to clearing and tilling fields there had to be provided some kind of temporary shelter. The original farm dwellings in America were not the log houses so familiar in pioneer tales, but tents and dugouts. Log houses could not be erected at once by unskilled woodsmen, and meanwhile temporary shelters were formed by digging into a bank and erecting a sort of roof over the open end of the cave.⁶ Van Tienhoven⁷ wrote:

"Those in New Netherland and especially in New England, who have no means to build farm houses at first according to their wishes, dig a square pit in the ground, cellar fashion, 6 or 7 feet deep, as long and as broad as they think proper, case the earth inside with wood all round the wall, and line the wood with the bark of trees or something else to prevent the caving in of the earth; floor this cellar with plank and wainscot it overhead for a ceiling, raise a roof of spars clear up and cover the spars with bark or green sods, so that they can live dry and warm in these houses with their entire families for two, three and four years, it being understood that partitions are run through those cellars which are adapted to the size of the family. The wealthy and principal men in New England, in the beginning of the Colonies, commenced their first dwelling houses in this fashion for two reasons; firstly, in order not to waste time building and not to want food the next season; secondly, in order not to discourage poorer laboring people whom they brought over in numbers from Fatherland. In the course of 3@4 years, when the country became adapted to agriculture, they built themselves handsome houses, spending on them several thousands."

NATURAL CLEARINGS OR OPENINGS.

The first task of pioneer agriculture was the preparation of the land for planting. It has often been asserted that all the regions in North America first occupied by European peoples were covered by dense forests.⁸ This how-

⁴ *United States*, I, 310.

⁵ Some of the sources which mention the reliance of the colonists on natural food resources are: Graves, *Letter sent from New England*, in *Young's Chronicles*, 264-266; Bradford, *Plymouth Plantation*, 149; Higginson, *New England Plantation*, in *Young's Chronicles*, 252; Hubbard, *General History of New England*, in *Mass. Hist. Soc. Collections*, 2d Series, V, 23; Johnson, *Wonder Working Providence*, 77, 83; Josselyn, *Two Voyages to New England*, in *Mass. Hist. Soc. Collections*, 3d Series, III, 259; Clarke, *Four Chiefest Plantations*, 30; *Representation of New Netherland*, in *Jameson's Narratives*, 295; Megapolensis, *Short Account of the Mohawk Indians*, in *Jameson's Narratives*, 168; Scot, *Model of the Government of East New Jersey*, in *N. J. Hist. Soc. Collections*, I, 279, 299. The accuracy of the source accounts has been checked by Goodale in his article, *New England Plants Seen by the Earliest Colonists*, in *Publ. Col. Soc. Mass. Transactions*, III, 189-194. Lists of indigenous plants known by the American Indians are given by Holmes in *Bailey's Cyclopedia*, IV, 26, and by Palmer in *U. S. Dept. Agric. Annual Report*, 1870, pp. 404-428.

⁶ Such dugouts are described by Johnson, *Wonder Working Providence*, 65, 113; by Stiles, *Ancient Windsor*, I, 33; *Letter of John Jones (from Pennsylvania)*, in *Myers's Narratives*, 457. Cellar dwellers are mentioned in the *New Haven Colony Records*, 70.

⁷ In O'Callaghan's *Documentary History of New York*, IV, 31.

⁸ E. g., Shaler, *Physiography of North America*, in *Winsor's America*, IV, p. xiv.

ever is far from true. The earliest settlers found numerous "natural" clearings or openings along the Coastal Plain, most frequently along the banks of rivers and small streams. The author of *The Planters Plea* (1630)⁹ wrote regarding New England:

"The Land affords void ground enough to receive more people then this State can spare, and that not onely wood grounds, and others, which are unfit for present use: but, in many places, much cleared ground for tillage, and large marshes for hay and feeding of cattle, which comes to passe by the desolatiō hapning through a three yeeres Plague, about twelve or sixteene yeeres past, which swept away most of the Inhabitants all along the Sea coast, and in some places utterly consumed man, woman & childe, so that there is no person left to lay claime to the soyle which they possessed;"

Another letter describing conditions in the same region speaks of "Open plains, in some places five hundred acres, some places more, some less, not much troublesome for to clear for the plough to go in;" ¹⁰ The earliest settlers in the Connecticut valley found much meadow land free from trees at Hartford and farther north. In Whately (Mass.):

"Both the east and west side settlers found the meadows and adjacent uplands ready for grazing and tillage. There was needed no preliminary work of clearing off the forests. They began to plant corn, and sow wheat and flax, and mow the grass the first season." ¹¹

In the region around the mouth of the Hudson River and southward to the Delaware such openings were more frequent. On David De Vries's plantation on North River there were 31 morgens (about 60 acres) of "maize-land, where there were no trees to remove; and hay-land lying all together, sufficient for two hundred cattle," ¹² Van der Donck emphasized the presence of clearings in his *Description of New Netherlands* (1656): ¹³

"Near the rivers and water sides there are large extensive plains containing several hundred morgens; in one place more and in another less, which are very convenient for plantations, villages and towns. There also are brooklands and fresh and salt meadows; some so extensive that the eye cannot oversee the same. Those are good for pasturage and hay, although the same are overflowed by the spring tides, particularly near the seaboard. . . . We also find meadow grounds far inland, which are all fresh and make good hayland."

In Pennsylvania an early settler found similar conditions: ¹⁴

"And one thing more I shall tell you. I know a man together with two or three more, that have happened upon a piece of Land of some Hundred Acres, that is all cleare, without Trees, Bushes, stumps, that may be Plowed without let, the farther a man goes in the Country the more such Land they find. There is also good Land, full of Large and small Trees, and some good Land, but few Trees on it."

A pioneer colonist of East New Jersey wrote home shortly after his arrival (1685).¹⁵

"I am settled here in a very pleasant place, upon the side of a brave plain (almost free of woods) and near the water side, so that I might yoke a Plough where I please."

⁹ In Force, *Tracts*, II, 14.

¹⁰ Thomas Graves, *Letter sent from New England* (1629), in Young's *Chronicles*, 265.

¹¹ Temple, *Whately*, 13; see also Judd, *Hadley*, 97; Love, *Colonial Hartford*, 136.

¹² De Vries in Jameson's *Narratives*, 205.

¹³ In N. Y. Hist. Soc. *Collections*, 2d Series, I, 148.

¹⁴ *Letter of Thomas Paschall* (1683) in Myers's *Narratives*, 254.

¹⁵ N. J. Hist. Soc. *Collections*, I, 326. Other references to clearings are frequent in the source materials reprinted in Myers's *Narratives of Early Pennsylvania* and Jameson's *Narratives of New Netherland*.

ORIGIN OF CLEARINGS.

The origin of the cleared spaces is not altogether certain. We know that many such openings were abandoned corn fields of the Indians. Plymouth and many other New England towns were built on open spaces formerly cultivated by the Indians¹⁶ and in New Netherland the old maize fields were an often-described feature of the landscape.¹⁷ The periodical burning of the woods by the Indians in order to facilitate the pursuit of game was undoubtedly largely responsible for the existence of clearings.

“From early times the Indians had been accustomed to burn over the whole country annually in November, after the leaves had fallen and the grass had become dry, which kept the meadows clean, and prevented any growth of underbrush on the uplands. One by one the older trees would give way, and thus many cleared fields, or tracts with only here and there a tree, would abound, where the sod would be friable, ready for the plow; or be already well covered with grass, ready for pasturage. The meadow lands thus burnt over, threw out an early and rich growth of nutritious grasses, which, if let alone, grew ‘up to a man’s face.’”¹⁸

Whatever their origin, there is no doubt of the saving of labor which such open spaces presented to the earliest settlers.

HOW THE LAND WAS CLEARED.

The task of clearing heavily wooded land was especially formidable to the European immigrants, unskilled in woodcraft. The open places were undoubtedly utilized often for raising the first season’s crops, but they were limited in extent and their fertility had been depleted by the Indians. Consequently the clearing of wooded lands must have begun very soon. There were two essential objects in clearing new land: (1) to admit sunlight to the soil by removing the foliage which shaded it; (2) to remove the obstructions to the tillage of the soil, the stumps and roots of the trees. The first of these objects was the prime essential and was accomplished by the Indians by girdling the trees. An incision was made through the bark all around the trunk and the trees were left to die standing.¹⁹ The colonists borrowed the practice of girdling, as well as the custom of burning the woods and meadows, from the Indians. It was a labor-saving process, but it had certain defects: the dead trees fell eventually, endangering the lives of the colonists and their cattle, and then the dead timber obstructed cultivation until it was removed. Nevertheless girdling persisted as a method of clearing for the first two centuries of northern agriculture.²⁰

A method more satisfactory in the long run was to cut down the trees and burn all the timber not wanted for building or fencing purposes. Van Tienhoven advised new settlers to arrive in the spring, in April at the latest, so as to employ the whole summer in clearing land and building houses.

¹⁶ Adams, in Essex Institute *Historical Collections*, XIX, 155.

¹⁷ See Jogues in Jameson’s *Narratives*, 261; Van Tienhoven in O’Callaghan’s *Doc. Hist. N. Y.*, IV, 28.

¹⁸ Temple, *Whately*, 13.

¹⁹ This operation was described by Capt. John Smith. See Mass. Hist. Soc. *Collections*, 3d Series, III, 38. Also by Belknap, *New Hampshire*, III, 131.

²⁰ See the description of clearing at Concord, N. H. (ca. 1800), by Dwight, *Travels* (edition of 1823), II, 114.

"All then who arrive in New Netherland must immediately set about preparing the soil, so as to be able, if possible to plant some winter grain, and to proceed the next winter to cut and clear the timber. The trees are usually felled from the stump, cut up and burnt in the field, unless such as are suitable for building, for palisades, posts and rails. . . ." ²¹

In New England as well as in New Netherland the first settlers seem to have been reluctant to adopt the primitive hoe-culture of the aborigines. They could not believe that a crop could be raised on new land until it had first been "stubbed," i. e., until all the roots of small trees and shrubs had been dug out. John Pynchon, of Springfield, Massachusetts, recorded in his account books (1668-1680), many agreements with men who were to stub, clear and plow new land. "They were to girdle large trees, cut down and clear off smaller trees, and grub up the roots of the little trees and bushes." ²² Jared Eliot ²³ commented on this fact as follows:

"Their [the first settlers'] unacquaintedness with the Country, led them to make choice of the worst Land for their Improvement, and the most expensive and chargeable Methods of Cultivation: They tho't themselves obliged to stubb all Staddle, and cut down or lop all great Trees; in which they expended much Cost and Time, to the prejudice of the Crop and impoverishing the Land."

THE FIRST CROPS.

The chief grain crop in the North Atlantic colonies from the beginning was the Indian corn or maize. Although unknown to Europeans before the discovery of the New World, it had so many advantages as a pioneering crop that it took precedence immediately over the cereals with which they were familiar and the seed of which they had brought with them.

Among the inventories of 50 estates in Essex County, Massachusetts, there are 16 in which crops are mentioned, either in the field or in the barn. Altogether 666 bushels of 6 different sorts of grain were inventoried. On practically every farm which reported any grain, Indian corn was mentioned and in amounts exceeding those of other cereals. Some indication of the relative importance of corn, wheat, and other cereals may be obtained from table I.

TABLE I.

Crop.	Times mentioned.	Quantity.
		<i>bushels.</i>
Indian corn	15	275
Wheat	12	152
Barley	7	71½
Peas	4	56½
Oats	2	60
Rye	6	51
Flax	3	
Hay	4	
Hemp	1	

²¹ In O'Callaghan's *Doc. Hist. of N. Y.*, IV, 30.

²² Judd, *Hadley*, 432.

²³ *Field Husbandry* (edition of 1760), I. Schoepf has similar remarks regarding the first residents of Pennsylvania. *Travels*, I, 264.

The inventories of 17 Connecticut estates probated 1639–1648²⁴ show Indian corn the predominant cereal, but with wheat a stronger competitor than in Essex County. Peas, rye, barley, and oats follow in approximately the order named.

The following extracts from inventories give a picture of the grain crops raised on specific farms:

Estate Henry Roffe, Newbury: 12 bushels Indian Corn; 9 bushels wheat; 2 bushels pease.

Estate Hugh Churchman, Lynn: 20 bushels wheat; 4 bushels Indian corn; 2 bushels barley; corn on the ground.

Estate John Talbey, Salem: 20 bushels Indian corn; 3 pecks oats.

Estate John Goffe, Newbury: 7 bushels Indian corn; 1 bushel English wheat; 1 bushel malt; 1 bushel meal.

Estate T. Nowell, Windsor: 7 bushels rye; 3 bushels malt; 20 bushels pease; 22 bushels wheat; 10 bushels Indian corn.

Estate R. Myman, Hartford: 1 acre meslin; 1 acre summer wheat; 1 acre oats; 3 roods pease and barley; 5 acres Indian corn.

Estate T. Dewy, Hartford: 5 acres of corn upon the ground; 7 other acres of corn upon the ground; hemp and flax.

The predominance of maize over other cereals in New England from the beginning is clearly indicated by the contemporary account of the food of the early settlers. With stewed pumpkins and bean or pea porridge, Indian meal or samp was the staple article of diet. Maize yielded more food per acre than the European grains; its yield was more uniform, being less dependent on the changes of seasons; it ripened early, being ready for harvest in four months from the time of planting, and in some respects it was a labor-saving crop. When planted in the Indian fashion among the stumps or the trunks of girdled trees, it required much less preparation of the soil than the colonists deemed necessary for other cereals.

INDIAN MANAGEMENT OF MAIZE.

The Indian management of maize was described by a contemporary observer as follows:²⁵

“It is Planted between the middle of *March* and the beginning of June. But most commonly from the middle of *April* to middle of *May*. Some of the Indians take the time of the coming up of a Fish, called Aloofes, into the Rivers. Others of the budding of some Trees.²⁶

“In the pure Northerly parts, they have a peculiar kind called Mohauks Corn, which though planted in *June*, will be ripe in season. The stalks of this kind are shorter, and the Ears grow nearer the bottom of the stalk, and are generally of divers colours.

“The manner of Planting is in Rows, at equal distance every way, about 5. or 6. feet. They open the Earth with the Howe, taking away the surface 3. or 4. inches deep, and the bredth of the Howe, and so throw in 4. or 5. Granes, a little distant one from another, and cover them with Earth. If two or three grow, it may do well. For some of them are usually destroyed by Birds, or Mouse-Squirrels.

“The Corn grown up an hands length, they cut up the weeds, and loosen the Earth, about it, with a broad Howe; repeating this labour, as the Weeds grow. When the

²⁴ *Conn. Colony Public Records*, I.

²⁵ Letter of Governor John Winthrop, jr., of Connecticut, Published in *Philosophical Transactions* of the Royal Society of London, XII (1678), 1065.

²⁶ Belknap says: “Yet, their judgment of the proper season for planting, cannot be amended. It was when the leaves of the white oak are as big as the ear of a mouse.” *New Hampshire*, III, 93.

Stalk begins to grow high, they draw a little Earth about it: and upon the putting forth of the Eare, so much, as to make a little Hill, like Hop-Hill. After this, they have no other business about it, till Harvest. . . .

“The Natives commonly Thresh it as they gather it, dry it well on Mats in the Sun, and then bestow it in holes in the Ground (which are their Barns) well lined with withered Grass and Matts, and then covered with the like, and over all with Earth: and so its kept very well, till they use it. . . .

“Where the Ground is bad or worn out, the Indians used to put two or three of the forementioned Fishes, under or adjacent to each Corn-hill, whereby they had many times a Crop double to what the Ground would otherwise have produced.

“The *English* have learned the like Husbandry, where these *Aloofes* come up in great plenty, or where they are near the Fishing-stages; having there the Heads and Garbage of Cod-fish in abundance, at no charge but the fetching. . . .

“The Indians, and some *English* (especially in good Ground, and well fished) at every Corn-hill, plant with the Corn, a kind of *French* or *Turkey-Beans*: The Stalks of the Corn serving instead of Poles for the Beans to climb up with. And in the vacant places between the Hills they will Plant squashes and Pompions; loading the Ground with as much as it will bear.”

The Dutch settlers followed the Indian methods closely:

“When the timber has been removed, and the brush burnt up, then we take a broad hoe, and cut out hills about six feet apart, and plant five or six grains in a hill, with which some persons also plant Turkey beans [as before noticed]. After the grain shoots up and grows, it requires two dressings. The weeding and cleaning is done with a broad adze, without breaking up the ground, and is not very laborious work. The weeds and trash in the first dressing, are cut off and placed in a row between the hills. The second dressing is easier. Then the weeds and sprouts are cut off around the hills, and the weeds and rubbish of the first cleaning, are drawn round the corn-hills, which afterwards grow high and tall, and smother all the weeds, stumps, and trash, and kill all other vegetation except pumpkins; those will grow among the maize.”²⁷

CULTIVATION OF MAIZE BY ENGLISH SETTLERS.

The English settlers in Connecticut before 1678 had introduced the use of the plough in cultivating maize. Winthrop added to his description of Indian agriculture:

“The *English* have now taken to a better way of Planting by the help of the Plough; in this manner; in the Planting time they Plough single Furrows through the whole Field, about 6 feet distant, more or less, as they see convenient. To these, they Plough others a cross at the same distance. Where these meet they throw in the Corn, and cover it either with the Howe, or by running another Furrow with the Plough. When the Weeds begin to overtop the Corn, then they Plough over the rest of the field between the Planted Furrows, and so turn in the Weeds. This is repeated once, when they begin to Hill the Corn with the Howe; and so the Ground is better loosened than with the Howe, and the Roots of the Corn have more liberty to spread. Where any Weeds escape the Plough, they use the Howe.”²⁸

Among the hills of the corn were planted beans²⁹ and pumpkins, after the multiple-cropping system of the Indians. The stalks served as poles for the beans to climb upon. The importance of corn is shown by its early acceptance as a payment in kind for taxes.³⁰ Corn seems to have served in all the col-

²⁷ Van der Donck, in *N. Y. Hist. Soc. Collections*, 2d series, I, 158.

²⁸ Winthrop, Royal Society of London *Philosophical Transactions*, XII, 1066. Ploughs were used in the cultivation of Indian corn in the Massachusetts Bay Colony, as early as 1687. See *Report of a French Protestant Refugee*, 34.

²⁹ *Phaseolus vulgaris*, known to the colonists as French or Turkey beans.

³⁰ *New Haven Colonial Records* (1641), 60.

onies as a preliminary crop before other grains. An English writer of 1670³¹ says of New England that the ground must first be planted with Indian corn before it will be fit for English seed, and Pastorius writes from Pennsylvania in 1700: "Also one cannot, the first year, plant either wheat or rye in such new land, but only Indian corn," ³² The hoeing of the corn killed out the weeds and cleaned the land for the succeeding less thrifty crop.

EUROPEAN GRAINS.

Among the European grains grown in the earliest settlements we find the following most frequently mentioned: wheat, rye, barley, oats, buckwheat, and peas. Wheat was the most highly esteemed if not the most widely consumed European breadstuff, and it was natural that the newcomers should make especial efforts to introduce it in their new homes. The earliest attempts to raise wheat in Plymouth in 1621, so Bradford informs us, proved a failure, and it seems not to have become an important crop there until at least a generation later.³³ Meanwhile it had become important enough in some New England towns, at least, to be receivable for taxes as early as 1640.³⁴ In the fertile alluvial soil of the Connecticut Valley wheat showed early promise of successful cultivation. We find it mentioned in inventories of estates of Hartford settlers as early as 1641,³⁵ and during the remainder of the seventeenth century this valley was the best grain-producing region in New England. In Northampton, Hadley, and Hatfield, says Judd,³⁶ every farmer raised wheat, and wheaten bread was common. Large quantities of wheat were shipped from this region to Boston. The account book of John Pynchon, a trader of Springfield,³⁷ shows shipments of wheat amounting to 1,500 bushels after the harvest of 1652. In the Middle Colonies wheat seems to have been successful from the first. Samples of wheat grown in New Netherland were sent back to Holland in 1626 along with other European grains³⁸ and after that date we find it mentioned frequently. It succeeded particularly well on the "flats" at Esopus on the Hudson.³⁹ In Penn's colony wheat is mentioned first among European grains in all source accounts.⁴⁰

Wheat and other European cereals were cultivated in New Amsterdam more intensively than Indian corn. Van der Donck⁴¹ wrote:

"The land whereon there are few standing trees, and which has been grubbed and ploughed twice, we hold to be prepared for a crop of winter grain. For summer grain one ploughing is sufficient. If it is intended to sow the same field again with winter grain, then the stubble is ploughed in, and the land is sowed with wheat or rye, which in ordinary seasons will yield a fine crop."

³¹ Clarke, *Four Chiefest Plantations*, 30.

³² Myers's *Narratives*, 405.

³³ *History of Plymouth Plantation*, 116; Stine, *Economic History of Wheat in America*, MS., chap. III, p. 28.

³⁴ Felt, *Ipswich (Mass.)*, 46.

³⁵ Love, *Colonial Hartford*, 156.

³⁶ *Hadley*, 353.

³⁷ Stine, in MS. *History of Wheat*, chap. III, p. 31.

³⁸ N. Y. *Documents Relative to Colonial History*, I, 37.

³⁹ Danckaerts, *Journal*, 324.

⁴⁰ Myers's *Narratives*, 240, 301, 323, 267.

⁴¹ N. Y. Hist. Soc. *Collections*, 2d series, I, 157.

Probably more often these grains were simply scratched in with a harrow, either on newly cleared ground or on land from which a maize crop had been harvested. Dr. More wrote from Pennsylvania, 1686: ⁴²

“The last year I did plant about twelve Acres of Indian Corn, and when it came off the Ground, I did only cause the Ground to be Harrowed, and upon that I did sow both Wheat and Rye, at which many Laughed, saying, That I could not expect any corn ⁴³ from what I had sowed, the Land wanting more Labour; yet I had this Year as good Wheat and Rye upon it, as was to be found in any other place, and that very Bright Corn.”

Wheat and rye were sown both in the fall and in the spring in the earliest settlements. Wassenaer ⁴⁴ says of New Netherland (1628):

“The winter grain has turned out well there, but the summer grain which ripened before it was half grown in consequence of the excessive heat, was very light.”

Van der Donck mentioned summer and winter sowing of wheat, rye, and barley, ⁴⁵ and one of the earliest accounts of Pennsylvania tells of summer and winter wheat. In the latter colony a crop of buckwheat was secured from the land between the harvesting of the spring wheat and planting of the winter grain. ⁴⁶ In New England spring or summer wheat seems to have been the chief variety sown for the first half century at least, ⁴⁷ but after 1660 an impetus was given to the cultivation of winter wheat by the blast, which more disastrously affected the summer grain.

THE WHEAT BLAST.

The so-called “blast,” now recognized as the black stem-rust, first appeared in eastern Massachusetts about 1660. Josselyn, ⁴⁸ with the curious mixture of fact and fancy which characterized many of the early descriptions of America, wrote in 1663:

“Our *wheat*, i. e., summer *Wheat* many times changeth into *Rye*, and is subject to be blasted, some say with a vapour breaking out of the earth, others, with a wind North-east or North-west, at such time as it flowereth, others again say it is with lightning. I have observed, that when a land of *Wheat* hath been smitten with a blast at one Corner, it hath infected the rest in a weeks time, it begins at the stem (which will be spotted) and goes upwards to the ear making it fruitless;”

In Connecticut the blast was first noticed a few years later. John Winthrop, jr., referred to it in a letter of 1666, and in 1668 he wrote that it had damaged the wheat crop several years,

“generally through all the plantations, both of ye Massachusetts colony, Plymouth, & this also [the colony of Conecticut] insomuch that the croppe of wheat hath failed divers yeares in most plantations. The corne flourished well till it came to be eared, and the eares also would at first appeare faire, and as if full, but no corne in them. There have beene thousands of acres in that māner every yeare. What the cause was,

⁴² Myers's *Narratives*, 285.

⁴³ I. e., grain, according to the English usage.

⁴⁴ In Jameson's *Narratives*, 88.

⁴⁵ N. Y. Hist. Soc. *Collections*, 2d series, I, 157.

⁴⁶ Letter of Thomas Paschall, in Myers's *Narratives*, 252.

⁴⁷ See Judd, *Hadley*, 95.

⁴⁸ *Two Voyages to New England*, in Mass. Hist. Soc. *Collections*, 3d series, III, 336-337. See also Morton, *New England Memorial*, 309; Flint, *Hundred Years Progress*, in Maine Board Agric. *19th Annual Report*, 1874, p. 114; Hutchinson, *Massachusetts Bay*, I, 485.

whether naturall, or a blasting frō heaven we know not. Our old husbandmen of England, some of them thought it a meldeu, others that the originall defect is in the roote: the peas, barley, rye & Indiā corne were not touched with it, as was generally observed.”⁴⁹

The causes of the blast were shrouded in mystery, as Winthrop's speculations show, and remained so for more than two centuries; meanwhile, early in the eighteenth century the relation of barberry bushes to the blast had been noted and legislation enacted for their removal.⁵⁰

RYE, BARLEY, OATS.

Rye was a strong competitor of wheat from the beginning, both in the Middle Colonies and in New England. On light sandy and gravelly soils it yielded better than wheat. Winthrop tells of much rye being sown with the plough in the Massachusetts Bay Colony in 1636.⁵¹ It was also sown broadcast on burned land and scratched in with a rake or harrow. In New Sweden, rye seems to have taken precedence over wheat, not on account of greater ease of cultivation, but because the Swedish colonists preferred rye bread.⁵² In New England the settlers would have preferred white bread, but the greater difficulty of cultivating wheat and the disastrous effects of the blast caused wheat flour to become a luxury for farmers, and the rye and Indian bread became the standard article of consumption.

Barley and oats were grown both in New England and the Middle Colonies from the first; the former for the production of beer, which was the popular drink even in New England, until the apple orchards began to bear; oats for provender for horses, except in the settlements where Scotch immigrants predominated,⁵³ as in East New Jersey. Oats seem not to have been used for human food in New England until about 1800.⁵⁴ The practice of sowing mixed crops was brought over from Europe. Peas and oats, and sometimes rye and oats, were sown for cattle food; meslin, a mixture of wheat and rye, was often used for bread. Field peas were raised for human food and not as a forage crop. They entered into agricultural trade to some extent, being exported from the Connecticut Valley to the West Indies via Boston.⁵⁵

FLAX.

Flax had been a common crop on farms in England in the sixteenth century, being a subject of legislative encouragement, and was cultivated among the first crops in New England as well as in New York and Pennsylvania. One of the earliest laws of Connecticut (1640) ordered every family to raise half a pound of hemp or flax.⁵⁶ The amount raised in any particular settlement

⁴⁹ *Winthrop Papers*, in *Mass. Hist. Soc. Collections*, 5th series, VIII, 122.

⁵⁰ For a discussion of later history of the blast and its effect on wheat cultivation see pp. 93, 238.

⁵¹ *New England*, I, 246.

⁵² Paschall, in *Myers's Narratives*, 252.

⁵³ Winthrop, *New England*, I, 104; Johnson, *Wonder Working Providence*, 91, n. 1; Trumbull, *Northampton* (Mass.), I, 380; Van der Donck, in *N. Y. Hist. Soc. Collections*, 2d series, I, 157; Scot, in *N. J. Hist. Soc. Collections*, I, 287.

⁵⁴ Miller and Wells, *History of Ryegate, Vermont*, 98.

⁵⁵ Van der Donck, in *N. Y. Hist. Soc. Collections*, 2d series, I, 160; Judd, *Hadley*, 355.

⁵⁶ *Conn. Colony Public Records*, I, 61.

depended a great deal upon the ability of the population to prepare the fiber and spin and weave it. There seems to have been no particular difficulty in the strictly agricultural operations with flax, but getting it through the processes of household manufacture involved many difficult and disagreeable tasks. For the first few years of the new settlements the people wore the clothes they had brought with them, or else traded for European goods. Only after the fur trade had failed and they had settled down to self-sufficient agriculture did the cultivation of flax begin in earnest. There was probably considerable difference also among the various groups of settlers in their experience in spinning flax. The wives of the Dutch settlers in New York, so Van der Donck⁵⁷ relates, did not spin very much; hence very little flax was raised there, but by 1670 the situation was changed, perhaps by the influx of English settlers from New England, for Denton⁵⁸ says: "they sowe store of flax, which they make every one Cloth of for their own wearing. . . ." The Germans who settled at Germantown, Pennsylvania, were expert linen weavers and grew much flax.⁵⁹ In the Swedish settlements on the Delaware flax was raised for the household manufacture of linen, and also in East New Jersey.⁶⁰

In New England there seems to have been little cultivation of flax until the introduction of the linen-spinning wheel and the manufacture of linen by the Scotch-Irish immigrants of the early eighteenth century. Before that time cotton imported from the West Indies was used to supplement the scanty supplies of flax and wool.⁶¹

Hemp we find occasionally mentioned. Being much in demand for naval stores in the commercial nations, it was a subject for experiment in the earliest settlements. In spite of legislative encouragement, it never proved a successful crop on the Atlantic seaboard.

TOBACCO.

Little tobacco was planted in New England, and even then only as a garden crop for private consumption. As a matter of fact, it was forbidden in the Massachusetts Bay Colony in 1629,⁶² but in New Netherland and New Sweden it seems to have been successfully undertaken as a cash crop. In 1644, Governor Printz, of New Sweden, reported exports of 4,991 pounds harvested in his colony, and 6,920 pounds in 1647.⁶³ In New Netherland tobacco was used as a preliminary crop to prepare the land for other purposes. Van Tienhoven remarked that tobacco "mellowed the soil" and was therefore cultivated on land before winter grain was sown.⁶⁴ It shared with maize the advantage of being a crop which could be planted without much preparation of the soil.

⁵⁷ N. Y. Hist. Soc. *Collections*, 2d series, I, 160.

⁵⁸ *Brief Description of New York*, 18.

⁵⁹ Frame, in Myers's *Narratives*, 304.

⁶⁰ Paschall, in Myers's *Narratives*, 252; Smith, *New Jersey*, 540.

⁶¹ Judd, *Hadley*, 380.

⁶² *Records*, I, 403.

⁶³ Myers's *Narratives*, 96, 120.

⁶⁴ O'Callaghan, *Documentary History of New York*, IV, 30.

VEGETABLES.

Beyond the growing of pumpkins, squashes and beans in the Indian fashion, the cultivation of garden vegetables was almost entirely lacking. Gardening was too intensive an occupation for pioneer farmers. But the colonists did find time to experiment freely with the seeds of the European garden vegetables which they brought over with them. Cabbages, turnips, onions, radishes, carrots, and parsnips were most frequently mentioned in New England sources. To this list the Dutch added beets, endive, succory, finckel, sorrel, dill, spinach, parsley, chevril, cresses and leeks. An account of 1650 states :

“Garden fruits succeed very well, yet are drier, sweeter, and more agreeable than in the Netherlands; for proof of which we may easily instance musk-melons, citrons or water-melons, which in New Netherland grow right in the open fields, if the briars and weeds are kept from them, while in the Netherlands they require the close care of *amateurs*, or those who cultivate them for profit in gardens, and then they are neither so perfect by far, nor so palatable, as they are in New Netherland.”⁶⁵

In Penn's colony, asparagus, cauliflower, and potatoes, in addition to the New England list, were mentioned in 1685. The inclusion of potatoes is noteworthy. Although taken to Ireland from the West Indies by way of Virginia before 1600, the American tubers were long regarded as an exotic there and in England, and found a place only in rich men's gardens. Penn tells us that they were planted by one Robert Turner, a rich merchant, near Philadelphia. The introduction of potatoes into New England as a food product came about a half century later, with the immigration of the Scotch-Irish.⁶⁶

FRUIT.

Apples, pears, plums, quinces, and cherries flourished in New England, having been raised partly from seeds and partly from trees brought over from England.⁶⁷ Josselyn⁶⁸ reported:

“Our fruit-Trees prosper abundantly. *Apple-trees, Pear-trees, Quince-trees, Cherry-trees, Plum-trees, Barberry-trees.* I have observed with admiration, that the Kernels sown or the Succors planted produce as fair & good fruit, without grafting, as the Tree from whence they were taken: the Countrey is replenished with fair and large Orchards.”

In this section apples seem to have been most generally grown of all fruits, owing to their hardiness. Cider had attained popularity as a farm beverage before 1700, although it did not displace beer for some time after that date.⁶⁹

Van der Donck saw apple and pear trees in New Netherland, some of which had been brought over from Holland and others which had been raised from seeds. The Dutch had also quinces and cherries. Danckaerts⁷⁰ said he had never seen or eaten finer apples than those which he found at Bergen, near the present Jersey City.

⁶⁵ Jameson's *Narratives*, 296.

⁶⁶ Carrier, *Beginnings of Agriculture in America*, 81-87.

⁶⁷ *Mass. Bay Col. Records*, I, 24; *Winthrop Papers*, in *Mass. Hist. Soc. Collections*, 3d series, IX, 265.

⁶⁸ *Mass. Hist. Soc. Collections*, 3d series, III, 337.

⁶⁹ Judd, *Hadley*, 364.

⁷⁰ *Journal*, 156.

“One kind was very large, fair, and of good taste, fifty-six of which only could be put in a heaped up bushel, that is, half a bag. Another variety, somewhat smaller, but not less fair in appearance, and of a better flavor, my comrade was acquainted with, and said they were called the *Double Paradise*. He acknowledged they were very delicate.”

Peaches were grown much more successfully in the Middle Colonies than in New England. Van der Donck⁷¹ wrote:

“If a stone is put into the earth, it will spring in the same season, and grow so rapidly as to bear fruit in the fourth year, and the limbs are frequently broken by the weight of the peaches, which usually are very fine.”

Danckaerts,⁷² a quarter of a century later, said of the peaches on Long Island:

“It is impossible to tell how many peach trees we passed, all laden with fruit to breaking down, and many of them actually broken down. We came to a place surrounded with such trees from which so many had fallen off that the ground could not be discerned, and you could not put your foot down without trampling them; and, notwithstanding such large quantities had fallen off, the trees still were as full as they could bear. The hogs and other animals mostly feed on them.”

Peaches had already been introduced on the Delaware River before Penn's arrival. He found them so abundant, “not an Indian plantation without them,” that he was uncertain whether they were not indigenous.⁷³ “Peaches, as well as wild plums, corn, cherries, and grapes were distilled for brandy,” says Paschall,⁷⁴ “and most people have Stills of Copper for that use.” Attempts were made to raise grapes for wine in practically all the early settlements, but with little success. Penn had a fine vineyard of French vines⁷⁵ with a French *vigneron*, but for the small farmer struggling for a bare existence such experiments were far too costly.

⁷¹ N. Y. Hist. Soc. *Collections*, 2d series, I, 153.

⁷² *Journal*, 121.

⁷³ Myers's *Narratives*, 227.

⁷⁴ *Ibid.*, 253.

⁷⁵ Pastorius, in Myers's *Narratives*, 398.

CHAPTER II.—LIVESTOCK.

EARLIEST IMPORTATIONS.

Livestock of various kinds, neat cattle, sheep, swine, goats, and horses formed a part of the initial equipment of all the earliest settlements except the temporary factories or trading posts. At the beginning there was a pitiful scarcity of stock in some of the settlements. Europe was the only source of supply of the original breeding-stock, for the Indians had no domestic animals except their dogs. The losses on the ocean voyage seem to have been large. Capt. John Smith¹ related that of 200 cattle brought over by Governor Winthrop for the Massachusetts Bay Colony on one voyage 70 died on the way. When occasionally a ship arrived without losses at sea the fact was noted as unusual.² When the animals finally arrived it was extremely difficult to provide adequate forage and shelter and to protect them against the wolves. In the face of such difficulties it was a noteworthy accomplishment of New England and the Middle Colonies in the seventeenth century to have become not only independent of outside sources of supply, but even to have developed a surplus of cattle, horses, and meat products for export.

As would naturally be expected, some settlements were from the first better provided than others. The Plymouth colonists managed to exist three years before they received any neat cattle, and even in 1627 they had neither horses nor sheep.³ The Massachusetts Bay Company, with its larger resources, was able to equip its settlers more adequately. In the very first year 30 cows and 12 mares, besides a number of swine and goats were sent over,⁴ and in the years 1630 to 1633 livestock of various kinds arrived on almost every ship. The settlements farther north on the New England coast must also have been well stocked. Although we have no records of the original importations, an inventory taken at Mason's plantation on the Piscataqua River in 1635 shows 58 cattle, 92 sheep and lambs, 27 goats, 64 swine, and 22 horses, mares, and colts.⁵ At Trelawny's plantation, near the present site of Portland, Maine, there were in 1648, 57 cattle, 18 goats, and 52 swine.⁶ Dutch settlers on Manhattan brought with them in 1625, 103 head of livestock, including stallions, mares, bulls, cows, and sheep.⁷ The Swedish settlements on the Delaware were, like the Plymouth colony, miserably provided for agriculture. Governor Printz reported in 1647 that there were in all only 25 head of cattle, and most of these had been purchased from neighboring colonies.⁸

¹ Mass. Hist. Soc. *Collections*, 3d series, III, 40; see also *The Planter's Plea*, in Force, *Tracts*, II, 43.

² Winthrop, *New England*, I, 192.

³ Bradford, *Plymouth Plantation*, 166, 217.

⁴ Higginson, in Young's *Chronicles*, 216.

⁵ *N. H. State Papers*, I, 115. The cattle had been imported from Denmark. (See p. 24.)

⁶ Willis, in Maine Hist. Soc. *Collections*, 1st series, I, 228.

⁷ Wassenaer, in Jameson's *Narratives*, 79.

⁸ Myers's *Narratives*, 124.

THE FORAGE PROBLEM—NATIVE GRASSES
UNSATISFACTORY.

A condition of prime importance for the successful raising of livestock is of course an abundant supply of nutritive forage plants. In this respect the North American continent was strikingly deficient. The Indians of the region kept no herbivorous domestic animals and hence had developed no forage plants. Consequently our important hay and pasture plants, timothy, Kentucky bluegrass, and the red and white clovers, were, like our domestic animals, imported from Europe. The first pastures were the woods, where the underbrush had been destroyed by the Indian burnings, and the natural openings or clearings in the lowlands along the banks of streams. There were found two chief kinds of forage plants; (1) the wild rye (*Elymus* sp.), the common grass along the Atlantic coast from Virginia northward, and (2) the broom straw (*Andropogon* Sp.), which was the dominant grass in the Middle Colonies but was also found in New England.

At first acquaintance these grasses looked promising; they grew high and thick. "Manhigh," "as high as my head," "thicke and long, as high as a man's middle; some as high as the shoulders, so that a good mower may cut three loads in a day."⁹ But it is remarkable how uniformly writers qualify their statements about the native grasses and admit that although the cattle ate them freely and got along well enough during the summer, the proportion of roughage to nutriment was so large that the hay was apt to be insufficient for winter. Capt. John Smith noted this fact and warned the New England planters to clear land for pasture as soon as possible. He wrote:

"There is grasse plenty, though very long and thicke stalked, which being neither mowne nor eaten, is very ranke, yet all their cattell like and prosper well therewith, but indeed it is weeds, herbs, and grasse growing together, which although they be good and sweet in the Summer, they will deceive your cattell in winter; therefore be carefull in the Spring to mow the swamps, and the low llands of *Auguan*, where you may have harsh sheare-grasse enough to make hay of, till you can cleare ground to make pasture, which will beare as good grasse as can grow any where, as now it doth in *Virginia*; and unlesse you make this provision, if there come an extraordinary winter, you will lose many of them and hazard the rest, especially if you bring them in the latter end of Summer, or before the grasse bee growne in the Spring, comming weake from Sea."¹⁰

We have similar testimony from the Middle Colonies. De Rasieres, writing in 1628, said of Manhattan:

"The grass is good in the forest and valleys, but when made into hay, is not so nutritious for cattle as here [i. e., in Holland], in consequence of its wild state, but it yearly improves by cultivation."¹¹

Thomas Budd said of the region on either side of the Delaware River:¹²

"In the *Woods* groweth plentifully a course sort of *Grass*, which is so proving that it soon makes the Cattel and Horses fat in the Summer, but the *Hay* being course, which is chiefly gotten on the fresh Marshes, the Cattel loseth their Flesh in the Winter, and become very poor, except we give them Corn;"

⁹ Josselyn, in *Mass. Hist. Soc. Collections*, 3d series, III, 240; Scot, in *N. J. Hist. Soc. Collections*, I, 295; Wood, *New England's Prospect* (Prince ed.), 12.

¹⁰ In *Mass. Hist. Soc. Collections*, 3d series, III, 37.

¹¹ In Jameson's *Narratives*, 104.

¹² *Good Order Established in Penn. and N. J.* (1685), p. 34.

The lack of really good hay and pasture is shown by the high regard in which the coarse reeds and sedges of the fresh and salt water marshes were held. Says Temple,¹³ the historian of Whately, Massachusetts:

“It was considered scarcely desirable or safe to form a Plantation where there was not plenty of ‘fresh marsh’—what we should call *open swamp*. And so, when the west side people petitioned for a new town, the Hadley Committee, in their answer to the General Court, gave as one of the strongest reasons against the separation, that the tract west of the river ‘does not afford *boggy meadow or such like, that men can live upon*; but their subsistence must be from their Home lots and intervals.”

INTRODUCTION OF ENGLISH GRASSES.

As long as the livestock had to rely on native grasses they were in danger of starvation. Drought, which was not infrequent, would so reduce the forage as to destroy whole herds. Cattle were at times slaughtered to save them from death by hunger.¹⁴ It was not long, however, before the English grasses were brought in. They spread rapidly and in a few generations were so common as to be considered indigenous. Their introduction was probably as much the result of accident as of design, by the importation of forage to feed the animals on shipboard. As early as 1665 “English grass,” a term which regularly included bluegrass and white clover, was mentioned in an official report on Rhode Island.¹⁵ In 1663 Josselyn says of New England: “Our English clover grass sown thrives very well.”¹⁶ Denton,¹⁷ in 1670, speaks of Long Island producing “excellent English grass, the seed of which was brought out of England, which they sometimes mow twice a year.” A few years later Danckaerts¹⁸ saw in the same locality fields covered with clover in blossom “which diffused a sweet odor in the air for a great distance.” In the Pennsylvania and New Jersey settlements we find a number of references to English grass, including specific references to clover, in the first years of the English settlements there. It is evident that sometimes the seeding was intentional. William Penn describes a successful experiment in sowing English grass seed in 1685 and tells us also that Robert Turner, a wealthy merchant-planter, sowed “great and small clover.”¹⁹ Budd²⁰ wrote that mutton throve well on the natural grass, adding—

“but if we sprinkle a little *English Hay-Seed* on the Land without Plowing, and then feed Sheep on it, in a little time it will so encrease, that it will cover the Land with *English Grass*, like unto our Pastures in *England*, provided the Land be good.”

That the seeding was occasionally accidental is shown by such a statement as the following regarding East New Jersey:²¹

“the ground all over brings forth good English grass naturally after it is ploughed.” “As soon as any of the land here comes to be cultivated, it overruns with small Clover-grass, by the pasturage and dunging of cattle, and so supplants the naturall grass and herbs, notwithstanding of their quick and strong growth.”

¹³ Temple, *Whately*, 13.

¹⁴ Green, *Hist. Address at Groton* (1876), p. 10.

¹⁵ *Rhode Island Colonial Records*, II, 129.

¹⁶ In *Mass. Hist. Soc. Collections*, 3d series, III, 336.

¹⁷ *Brief Description of New York*, 5.

¹⁸ *Journal* (1679), p. 131.

¹⁹ *Further Account of Penn.*, in Myers's *Narratives*, 264, 269.

²⁰ *Good Order Established in Penn. and N. J.* (1685), p. 37.

²¹ Scot, in *N. J. Hist. Soc. Collections*, I, 291, 295.

The seed used, as one of the above quotations indicates, was unwinnowed chaff gathered from the hay mows or around the hay stacks, consequently there could be little care in the selection of hay plants, and the resulting pasturage contained an abundance of old-world weeds. But even so it was greatly superior to the forage afforded by the native American grasses.²²

MANAGEMENT AND CARE OF LIVESTOCK.

One of the necessities of a system of mixed husbandry such as prevailed in all the earliest settlements was the protection of growing crops from livestock. Inclosures or fences of some kind were obviously needed, but fencing was a labor-consuming process and in many of the settlements the constant energies of all the labor force were necessary to clear the land, put in crops and provide shelter. In the Middle Colonies, where settlements were generally made by individuals without, at first, any group cooperation, the problem was one for each farmer to work out as best he could. But in New England and in the towns established by New Englanders on Long Island, in Westchester County, New York, and in northern New Jersey the method of community settlement made possible a system of common pasturage. Among the Dutch of New Netherland common pasturage seems to have been a general institution even before the English conquest,²³ and after that event it was definitely recognized in the Duke of York laws.²⁴ Governor Nicolls said in an official report (ca. 1669):²⁵ “. . . . The feed of Cattell is free in common-age to all Townships, The Lots of Meadow or Corne Ground are peculiar to each Planter.”

The fullest development of the system of common fields and common fences was of course found in New England.²⁶ The tillage and mowing land of the community was laid out in common fields, which were surrounded by common fences. The fence, of posts and rails with a ditch before it, was constructed and kept in repair by the holders of allotments within the fields, each man being responsible for a certain length of fence in proportion to the extent of his allotment. It ought to be noted here that although tillage was carried on in a common field it was not tillage in common. Every settler cultivated his own allotment; he was, however, under restriction as to choice of crops and date of harvest.

While the crops were on the ground, from early spring until after harvest, the fields were closed to grazing and the livestock were pastured outside of the village in care of the village shepherds, cowherds, swineherds, and goatherds. The young stock, the sheep, and the swine were pastured in remote uncleared or partially cleared tracts the “town commons”; the working oxen, horses, and milch cows on land nearer the village, so that they could be driven back and forth daily.

²² In the preparation of this section the author has drawn freely from Carrier, *Beginnings of Agriculture in America*, and also from Carrier and Bort, *History of Kentucky Bluegrass and White Clover in the United States*, in *Journal of Am. Soc., Agronomy*, VIII (1916), pp. 256-266.

²³ Elting, in *J. H. U., Studies*, IV, No. 1 (1886), pp. 24, 41.

²⁴ Reprinted in *N. Y. Hist. Soc. Collections*, 1st series, I, 307 et seq. See especially 327-331.

²⁵ In O'Callaghan, *Documentary History of New York*, I, 87.

²⁶ See pp. 49 et seq.

The sheep were often pastured separately in care of a shepherd who remained with them for the whole grazing season, folding them at night by the use of movable pens.²⁷ Swine were the most troublesome of all livestock, as the frequency of the legislative attempts to control them testifies. They were pastured at a great distance from the growing crops; in New Haven (1641)²⁸ it was ordered that all that have hogs should pasture them 5 miles from the plantation, "and haunt them forth abroad, nevertheless everyone is to endeavor to secure their corn by sufficient fences." All swine which roamed abroad not in charge of a herdsman were to be ringed, and during the season when the crops were on the ground were in addition to wear a wooden yoke to prevent rooting.²⁹ The constant reiteration of such provisions and the assessment of damages in town courts against the owners of unruly swine show such precautions to have been often disregarded.

In order to facilitate the work of the herdsmen, the common pastures were often situated on an island or on a peninsula where the sea acted as a fence to keep the stock from straying. The islands in Boston Harbor were utilized as pastures; so also Staten Island and Coney Island near New York.

DUTIES OF THE COWHERD.

The duties of the cowherd, the picturesque official who went through the village street every morning sounding his horn and gathering his charges and returning with them in the evening, are set forth in many of the ancient records. For example, the following is the agreement with a herdsman in Ipswich, Massachusetts, 1661.³⁰

"Haniel Bosworth is to keep the herd of cows on the north side of the river, from the 1st of May to the 20th of October. He is to go out with them half an hour after sunrise and to bring them home a little before sun-set, at 13 s. a week, 'a peck of corn a head at their going out, one pound of butter or half peck of wheat in June, and the rest of his pay at the end of his time, whereof half to be paid in wheat or malt; the pay to be brought to his house within six days after demanded, or else to forfeit 6 d. a head more.' 'Agreed with Henry Osborn to join Bosworth to keep the cows on the same terms. One of them to take the cows in Scott's Lane and to blow a horn at the meeting-house green in the morning.'"

OPENING THE MEADOWS—STINTED COMMON.

In the fall after harvest, on a day fixed by the town authorities, the barriers were taken down and the village cattle were allowed to pasture on the stubble. This yearly "opening of the meadows" was an event in the life of the village.³¹ Such pasturage was regarded as especially valuable in preparing the cattle for the long winters and the rights of the "proprietors" to enter their cattle were jealously guarded. The common was "stinted," that is, an order was passed by the town authorities fixing the number of livestock of various kinds which might be introduced, each owner's allotment varying according

²⁷ Temple and Sheldon, *Northfield*, 281; Judd, *Hadley*, 102.

²⁸ *New Haven Colony Records*, 52.

²⁹ See *Dedham Town Records*, III, 6.

³⁰ Felt, *Ipswich*, 44.

³¹ See the description in Sheldon's *Common Field of Deerfield*. In Pocumtuck Valley Memorial Association, *Hist. and Proceedings*, V, 250.

to the acreage of the field which he had tilled or according to the value of the feed remaining on his land. Thus in New Haven it was ordered (1642), that the Neck should be a stinted common for cattle and the settlers were allowed to enter animals in proportion to their holdings in the field, according to the following ratio: 12 acres to a horse, 6 acres to an ox, 3 acres for a young steer not over 2 years old and 2 acres for a calf.³² The method of assigning rights in the common field at Deerfield (Mass.), is described as follows:³³

“The unit for a right was an ox, and other animals were graded by that standard. The grading varied from season to season, according to the whim or judgment prevailing at the meeting where values were fixed.

“As a general rule a cow was considered equal to an ox and counted one right. Three three-year-olds equaled two rights, two two-year-olds one right, and three calves or five sheep one right. Horses appear to have been considered undesirable and their presence was not encouraged. Sometimes they were let in on one right but oftener were charged three and sometimes five rights. Some years they were ruled out entirely, and no horse was admitted on a right that was bought.”

In Dorchester, Massachusetts, there were 120 “cow rights” in a common pasture of 480 acres; 5 goats, or 10 kids, or 2 yearlings, or 4 calves or 1 horse, or 1 ox were accounted equal to 1 cow.³⁴

BRANDS AND EARMARKS.

The ownership of animals in the common herds was established by a system of brands or earmarks which were registered with the town authorities in New England and with the county clerks in the Middle Colonies. In 1664 we find the general court of the Connecticut Colony passing the following law:³⁵

“For the preuenting of differences that may arise in the owneing of Cattle that be lost or stree away, It is Ordered, that the owners of any Catle within these Plantations shall earemarke or brand all their Cattle and swyne that are aboue halfe a yeare old (except horsses) and that they cause their seuerall marks to be registered in the Towne booke; and whatsoeuer cattle shall be found vnmarked after the first of May next shall forfeit 5 s. a head, whereof 2 s. vid. to him that discouers yt, and the other to the Country.”

THE CONTROL OF BREEDING.

When the stock ran in common herds any attempt on the part of an individual owner to improve his particular group of animals by selection of males for breeding was of course impossible. For the control of breeding communal action was necessary. It is a tribute to the intelligence and decision of the New England colonists that in a period when so little attention was paid anywhere to stock breeding they took measures to raise the standards of their flocks and herds. The town bull is a well-known feature of early colo-

³² *New Haven Colony Records*, 82.

³³ In Pocomtuck Valley Memorial Association, *History and Proceedings*, V, 249.

³⁴ *Dorchester Town Records*, 23.

³⁵ *Conn. Col. Pub. Rec.*, 1, 118 (1636-65). Reproductions of earmarks are given in the *Plymouth Town Records*, I, 1, in *Chester (Penn.) Court Records* (1684), reprinted in *Smith's Delaware County, Penn.* 151, and for *Cape May County, New Jersey*, in *Penn. Magazine of History*, XV, (1891-1892), 370.

nial economy. Various townsmen were appointed to keep a bull and the price of its service was fixed by law.³⁶

It is important to note that in some towns the selection of the bull calves which were to be raised as town bulls was carefully attended to, evidently for the purpose of securing the best possible breeding stock. As early as 1639 the Town of Hartford³⁷ ordered that a committee of two settlers

“shall view such Bull Calfs as they shall thinck ffit to bee kept for bulls and shall give notis to [the] Townsmen who shall Agree wth the ptyes as they shall see best: to haue them kept for bulls.”

In the Windsor, Connecticut, town records³⁸ we read (1653) that two men were directed “to appoint what calves shall be reared for bulls” A committee to view bull calves was appointed in Guilford, Connecticut, in 1649.³⁹ Care for breeding was not confined to cattle. In 1673 the general court of the Connecticut Colony ordered that two or three men in each plantation should keep rams and none should be permitted to run at large with the ewes.⁴⁰ The breeding of horses early became an important branch of the colonial livestock industry because of the lucrative trade in these animals with the West Indies; hence it is not surprising to find legislative action tending to improve the breed. In Massachusetts Bay Colony it was forbidden in 1668 to let any stallions over 2 years old under 14 hands high run at large in commons and woods,⁴¹ and in Connecticut it was required (1674) that all horses over 2 years old under 13 hands high should be gelded.⁴²

THE NEAT CATTLE—THEIR VARIED ANCESTRY.

The colonial cattle had a varied ancestry. It seems certain that the first cattle of the Massachusetts Bay Colony came mostly from Devonshire and were the ancestors of the present Devons.⁴³ To this strain there was soon added an important mixture by the importation of Danish cattle in 1633 to Capt. John Mason's plantation, on the Piscataqua River, New Hampshire. They were large yellow animals brought over to be used principally as draft animals in Mason's lumbering operations. They increased rapidly and at Mason's death in 1635 amounted to perhaps 300 in all. Some of Mason's creditors seized the best of them and they were dispersed among the small farmers along the river. A herd of 100 head were driven overland to Boston, where they were sold in 1640.⁴⁴ The so-called “native” or “red” cattle of New England included also admixture of Dutch stock, and of black cattle from the Spanish West Indies.⁴⁵ The Dutch cattle brought to New Nether-

³⁶ See *Dorchester Records* (1633), in *4th Report Boston Records*, 33.

³⁷ Conn. Hist. Soc. *Collections*, VI, 29.

³⁸ Book I, 15, quoted in Stiles, *Ancient Windsor*, I, 175.

³⁹ Steiner, *Guilford*, 242.

⁴⁰ *Public Records*, II, 197.

⁴¹ *Records*, IV, pt. 2, 367.

⁴² *Public Records*, II, 244. (This act was repealed in 1726, *Ibid.*, VII, 31.)

⁴³ Thompson, *MS. History of Stock Raising*, ch. II. This conclusion is supported by investigations of the ports from which the ships bringing cattle sailed. See also Potter, *Native Cattle of New Hampshire* in N. H. State Agric. Soc. *Transactions* (1854), 232.

⁴⁴ See Dean, *Capt. John Mason*, 87; Potter, *op. cit.*, 227-230; Belknap, *New Hampshire*, III, 142.

⁴⁵ Potter, *Native Cattle of New Hampshire* in N. H. State Agric. Soc. *Transactions* (1854), 232. Winthrop tells (1635) of the importation of 63 heifers from Holland. *New England*, I, 191.

land were soon crossed with English stock brought from New England. They seemed to be more hardy than the Holland cattle and consequently endured better the scanty fodder and lack of shelter.⁴⁶ In Pennsylvania the cattle of the English settlers were mostly purchased from the Swedes on the Delaware, the descendants of a few animals which the latter had brought from Sweden with intermixture of importations from New Netherland and New England.⁴⁷ It appears, therefore, that the colonial cattle were derived from four main stocks—English, Danish, Dutch and Swedish—which by the process of intercolonial trade soon became indistinguishably blended.

CARE OF LIVESTOCK—SHELTER AND WINTER FEED

Livestock were given little winter shelter in any of the colonies. Such had been the practice in England and there are many indications that the earliest settlers did not realize how much more severe the winters were apt to be in the new country; and, besides, there was again the scarcity of labor; it was perhaps a choice between providing adequate shelter for themselves or for their cattle. Winthrop records, December 26, 1630: "Many of our cows and goats were forced to be still abroad for want of houses."⁴⁸ And Wood,⁴⁹ in 1634, wrote of New England:

"There is no want of Winter fodder till *December*, at which time men beginne to house their milch-cattle and Calves. Some, notwithstanding the cold of the Winter, have their young Cattle without doores, giving them meate at morning and evening."

For winter feed the scanty supply of hay was occasionally supplemented by a little wheat straw or a few corn husks. Governor Winthrop⁵⁰ remarked in his *Description of Maize*:

"The Stalks of this Corn, cut up before too much dryed, and so laid up, are good Winter-fodder for Cattle. But they usually leave them on the Ground for the Cattle to feed on. The Husks about the Ear are good Fodder, given for change sometimes after Hay."

With such care the New England cattle early acquired through a vigorous process of natural selection a reputation for tough vitality. In the *Representation of New Netherland* (1650),⁵¹ the English cattle, i. e., those brought from New England, are contrasted with the more pampered Dutch breed:

"The tame cattle are in size and other respects about the same as in the Netherlands, but the English cattle and swine thrive and grow best, appearing to be better suited to the country than those from Holland. They require, too, less trouble, expense and attention; for it is not necessary in winter to look after such as are dry, or the swine, except that in the time of a deep snow they should have some attention. Milch cows also are much less trouble than they are in Holland, as most of the time, if any care be requisite, it is only for the purpose of giving them occasionally a little hay."

Van der Donck⁵² says of the English cattle in the Dutch Colony:

"They also have English cattle in the country, which are not imported by the Netherlanders, but purchased from the English in New-England. Those cattle thrive as well

⁴⁶ In Jameson's *Narratives*, 296; Van der Donck, in *N. Y. Hist. Soc. Collections*, 2d series, I, 165.

⁴⁷ Kalm, *Travels* (1770 ed.), I, 141.

⁴⁸ *New England*, I, 47.

⁴⁹ *New England's Prospect* (Prince ed.), 13.

⁵⁰ *Philosophical Transactions of the Royal Society of London*, XII (1678), 1067.

⁵¹ In Jameson's *Narratives*, 296.

⁵² In *N. Y. Hist. Soc. Collections*, 2d series, I, 165.

as the Holland cattle, and do not require as much care and provender; and, as in England, this breed will do well unsheltered whole winters. This breed of cattle do not grow near as large as the Dutch cattle, do not give as much milk, and are much cheaper; but they fat and tallow well."

RELATIVE IMPORTANCE OF VARIOUS KINDS OF STOCK.

Neat cattle, including working oxen, beef cattle and dairy cows taken together, seem to have been the most important kind of livestock generally throughout the colonies, although there developed at a surprisingly early date certain regions where sheep were predominant. The tax lists of 10 Long Island towns in 1675 showed 4,293 neat cattle, 1,564 sheep, 1,344 swine and

TABLE 2.—*Neat cattle, excluding oxen (bulls,^a cows, heifers, and steers, over 1 year old).*

[Sources: O'Callaghan, *Doc. Hist. N. Y.*, II, 439 et seq.; IV, 139 et seq.; *Boston Tax Lists in First Report Boston Records* (1876), 128 et seq.]

	Long Island, Dutch towns (1675).	Long Island, English towns (1675).	Boston, Muddy River (1687).	Boston, Romney Marsh (1687).	Essex County inventories (1635-1664).	Connecticut inventories (1639-1648).	New Haven inventories.	Total.
Total farms listed.....	153	271	31	34	50	15	16	570
Number of farms reporting cattle	148	242	31	32	46	15	16	530
P. ct. of all farms reporting cattle	97	89	100	94	92	100	100	93
Total neat cattle reported	1,206	2,366	195	344	287	75	150	4,623
Average No. of cattle per farm	8.1	9.8	6.3	10.8	6.2	5.0	9.3	8.7
No. of farms reporting:								
1 to 5 cattle.....	58	77	14	7	19	9	8	192
6 to 10 cattle.....	49	95	13	12	16	6	2	193
11 to 15 cattle.....	27	47	4	6	11	0	4	99
16 to 20 cattle.....	8	22	0	4	0	0	1	35
21 to 25 cattle.....	5	9	0	2	0	0	1	17
Over 25 cattle.....	1	5	0	1	0	0	0	7
Largest herd reported..	36	37	13	40	15	10	22	40

^a Bulls were included with oxen in the Long Island inventories.

941 horses.⁵³ In Muddy River (now Brookline), which was in 1678 a farming section of Boston, the assessors reported 215 neat cattle, 214 sheep, 56 horses and 29 swine. However, in another section of the same town, including Romney Marsh (now Chelsea) and the islands of Boston Harbor, the sheep far outnumbered all other livestock, amounting to 1,544 as compared to 416 neat cattle, 69 horses, and 95 swine.⁵⁴ The general preponderance of neat cattle is attested also by the examination of the inventories of estates which were filed with the wills of early settlers. In Essex County, Massachusetts,⁵⁵ 50 such inventories show 381 neat cattle, 102 sheep, 11 horses, and 160 swine. The inventories of 15 Connecticut settlers (1639-1648)⁵⁶ show 108 neat cattle, 88 swine, 16 horses, and only 4 sheep. In 1663 there were on

⁵³ O'Callaghan, *Documentary History of New York*, II, 439 et seq., and IV, 139 et seq.

⁵⁴ Boston tax lists, in *First Report Boston Records* (1876), 128 et seq.

⁵⁵ Essex County Quarterly Courts, *Records and Files*, I (1636-1656), and *Probate Records*, County of Essex, I (1635-1664).

⁵⁶ In Conn. Col. *Public Records*, I, 442 et seq.

110 farms in the settlements originally made by the Swedes on the Delaware, then under Dutch rule, 200 cows and oxen, 20 horses, 80 sheep, and several thousand swine.⁵⁷ While the tax lists and inventories do not furnish sufficient data for trustworthy generalizations covering all the northern colonies, nevertheless the pictures which they present of conditions in a few typical areas are deserving of close analysis.

The general accounts of agriculture in the early settlements uniformly mentioned neat cattle most prominently among livestock. The importance of cattle in the life of the early settlers is emphasized occasionally in the reasons given for the formation of new settlements. We are told that the founding of Hartford, Connecticut, was caused by the desire of the farmers of eastern Massachusetts for more and better land for pasturing their cattle.⁵⁸ In Pennsylvania a similar cause for dispersion was present. Thomas wrote in 1698⁵⁹ that the people were "obliged to go farther up into the Countrey, because there is the chiefest and best place for their Stocks."

DAIRYING AND BEEF PRODUCTION.

Dairying and raising of beef cattle for market were generally not differentiated. The market for milk was limited by the difficulties of transportation, and even in the largest towns, such as Boston, cows were kept. Butter and cheese were made on every farm, but were not of a high quality. Such processes demanded more care and attention than the ordinary farmer could then afford. Hence the city people throughout the seventeenth century and until the end of the eighteenth century imported at least part of their butter and cheese from England and Ireland.⁶⁰ The raising of beef cattle and other livestock for sale began very early. Farmers in the surrounding towns drove their animals to the slaughter-houses in Boston, New York, and Philadelphia and salted meat was shipped to the West India Islands. In that region of specialized farming there was a constant demand for salted beef and pork and for horses as well. The New England settlements until about 1650 were importers of livestock, not only from Europe but also from the Southern Colonies, chiefly from Virginia. But after the middle of the seventeenth century the New England settlements began to have a surplus for export, not only of beef and pork, but also horses and sheep.⁶¹ The result of opening the market was the beginning of specialization in cattle-raising in at least one region in New England (Hampshire County, Massachusetts, in the Connecticut Valley). Grass-fed cattle were driven to Boston from this section soon after its settlement.⁶²

"John Pynchon sent cattle in the fall, from Springfield to Boston, before 1655; and he sent winter-fattened cattle in the spring before 1670, and many years after. It is not known when the farmers of Northampton, Hadley and Hatfield began to stall-feed oxen for market. It is manifest from the records of Hatfield, that a number of cattle were fattened there in the winter of 1696-7, and that this was not a new business."

⁵⁷ Johnson, *Swedish Settlements on the Delaware*, II, 667.

⁵⁸ Love, *Colonial Hartford*, 116.

⁵⁹ *Historical Account*, in Myers's *Narratives*, 325.

⁶⁰ Judd, *Hadley*, 376.

⁶¹ The trade in livestock is further discussed on p. 44.

⁶² Judd, *Hadley*, 368.

SHEEP.

The sheep of the colonies in the seventeenth century were derived from England and from Holland. Sheep were more difficult to establish in the earliest settlements than the other kinds of livestock. They were particularly liable to attack by wolves, and severe losses were sustained by exposure to cold winters without shelter. But wool must be had, and the colonists, particularly in New England, set in motion the forces of legislation to encourage its production. In the Massachusetts Bay Colony the towns were urged in 1645 to take steps to encourage raising of more sheep; in 1648 sheep were given especial privileges in the common pastures. In 1654 the domestic supply of wool was still deficient and the exportation of sheep was restricted and the

TABLE 3.—*Sheep over one year old.*

[Sources: O'Callaghan, *Doc. Hist. N. Y.*, II, 439 et seq.; IV, 139 et seq.; *Boston Tax Lists in First Report Boston Records* (1876). 128 et seq.]

	Long Island, Dutch towns.	Long Island, English towns.	Boston, Muddy River.	Boston, Romney Marsh.	Essex County inven- tories.	Connect- icut inven- tories.	New Haven inven- tories.	Total.
Total farms listed.....	153	271	31	34	50	15	16	570
Number of farms re- porting sheep	32	116	13	30	15	1	6	213
Per cent of all farms re- porting sheep	21	43	42	88	30	6.6	37	36
Total sheep reported...	191	1,473	214	1,544	102	4	54	3,582
Average sheep per farm	5.9	12.7	16.5	51.5	6.8	4.0	9.0	16.8
Number of farms re- porting:								
1 to 10 sheep.....	27	68	2	7	13	1	4	122
11 to 20 sheep.....	5	29	9	9	2	0	1	55
21 to 40 sheep.....	0	16	2	9	0	0	1	28
41 to 60 sheep.....	0	1	0	0	0	0	0	1
Over 60 sheep.....	0	2	0	5	0	0	0	7
Largest flock reported.	16	81	40	370	16	4	24	370

slaughter of rams and wether lambs under 2 years old was prohibited.⁶³ In the Connecticut Colony sheep were exempted from taxation, 1666, and in 1670 all males over 14 were required to work one day a year in clearing underbrush for sheep pasture.⁶⁴ Rhode Island seems not to have felt the need of encouraging the sheep-growing industry, and in fact this colony had by 1700 become the chief seat of sheep raising in New England. In 1665 an official Commission sent from England reported of Rhode Island: "In this province is the best English grass and the most sheep,"⁶⁵ and the same testimony was given at an official inquiry in London in 1676.⁶⁶ Rhode Island was the source whence some of the sheep of the Middle Colonies were derived.⁶⁷

⁶³ Mass. Bay Colony *Records*, II, 105, 251; III, 355, 424.

⁶⁴ Conn. Col. *Public Records*, II, 34, 139.

⁶⁵ *Hutchinson Papers*, II, 416.

⁶⁶ See Weeden, *Early Rhode Island*, 114.

⁶⁷ Budd, *Good Order Established in Penn. and N. J.* (1685), p. 40.

In the Middle Colonies sheep were not as numerous as in New England. Van der Donck wrote in 1656:⁶⁸

“ Sheep are also kept in New Netherland, but not as many as in New-England, where the weaving business is driven, and where much attention is paid to sheep, to which our Netherlanders pay little attention. The sheep thrive well, and become fat enough. I have seen mutton so exceedingly fat there, that it was too luscious and offensive. The sheep breed well, and are healthy. There is also good feeding in summer, and good hay for the winter. But the flocks require to be guarded and tended on account of the wolves, for which purpose men cannot be spared; there is also a more important hindrance to the keeping of sheep, which are principally kept for their wool. New-Netherlands throughout is a woody country, being almost every where beset with trees, stumps and brushwood, wherein the sheep pasture, and by which they lose most of their wool, which by appearance does not seem to be out, but when sheared turns out light in the fleeces.”

Of sheep in early Pennsylvania and New Jersey we have little information, save for the testimony of Budd (1685) and Thomas (1698), who agree that they were present in considerable numbers, were free from many of the diseases to which they were subject in England and were remarkably prolific.⁶⁹

DRAFT ANIMALS—HORSES AND OXEN.

The horses of New England were originally imported from England, but were soon supplemented by 27 Flanders mares and 3 stallions brought from Holland in 1635.⁷⁰ In New Netherland, according to Van der Donck,⁷¹ there were both Dutch and English horses. The latter were the lighter and used for riding rather than as draft animals. He continues:

“ There are *Curacoan* and *Arabian* horses imported into the country, but those breeds are not very acceptable, because they do not endure the cold weather of the climate well, and sometimes die in winter. The whole of this breed require great care and attention in the winter. Fine large horses are bred in the country, which live long and are seldom diseased.”

The foundation of a good breed of horses in Pennsylvania was laid by William Penn, who brought over 3 brood mares at his first coming and in 1699 imported “ the magnificent colt, Tamerlane, of the best strain in England.”⁷² Horses were used throughout the earliest settlements for riding and to a less extent as draft animals, either alone or with oxen. But oxen were generally preferred for ploughing and other farm work. A comparison of the numbers of oxen and horses inventoried in the estates of Essex County settlers shows a predominance of the former in the ratio of 6 to 1; and oxen are clearly predominant in 1675 in the English towns on Long Island. In the Dutch towns horses were the more numerous, but oxen were also used. Van Tienhoven⁷³ advised new settlers in New Netherland (1650):

“ Yoke oxen for the plough, inasmuch as in new lands full of roots, oxen go forward steadily under the plough, and horses stand still, or with a start break the harness in pieces.”

⁶⁸ In N. Y. Hist. Soc. *Collections*, 2d series, I, 166.

⁶⁹ Budd, *Good Order Established in Penn. and N. J.*, 39; Thomas, in Myers's *Narratives*, 324.

⁷⁰ Winthrop, *New England*, I, 191.

⁷¹ In N. Y. Hist. Soc. *Collections*, 2d series, I, 165.

⁷² Eggleston, *Husbandry in Colony Times*, in *Century Magazine*, XXVII, 445.

⁷³ In O'Callaghan *Documentary History of N. Y.*, IV, 32.

They evidently took the advice, for in 1656 Van der Donck⁷⁴ reported: "Oxen do good service there, and are not only used by the English, but by

TABLE 4.—*Horses over one year old.*

[Sources: O'Callaghan, *Doc. Hist. N. Y.*, II, 439 et seq.; IV, 139 et seq.; *Boston Tax Lists in First Report Boston Records (1876)*, 128 et seq.]

	Long Island, Dutch towns.	Long Island, English towns.	Boston, Muddy River.	Boston, Romney Marsh.	Essex County inventories.	Connecticut inventories.	New Haven inventories.	Total.
Total number of farms listed	153	271	31	34	50	15	16	570
No. of farms reporting horses	128	230	30	27	6	8	11	440
Per cent of all farms reporting horses	84	85	97	80	12	53	69	77
Total horses reported.	379	562	56	69	11	16	39	1,132
Average horses per farm	3.0	2.4	1.9	2.5	1.8	2.0	3.5	2.5
Number of farms reporting—								
1 horse	19	102	13	6	4	3	1	148
2 horses	42	45	9	15	2	2	3	118
3 horses	25	32	7	2	0	3	3	72
4 horses	22	24	1	1	0	0	1	49
5 horses	12	10	0	2	0	0	1	25
6 horses	4	3	0	1	0	0	1	9
More than 6 horses	4	14	0	1	0	0	1	20
Largest no. reported...	8	9	4	8	2	3	8	9

TABLE 5.—*Oxen, four years old and over.*

[Sources: O'Callaghan, *Doc. Hist. N. Y.*, II, 439 et seq.; IV, 139 et seq.; *Boston Tax Lists in First Report Boston Records (1876)*, 128 et seq.]

	Long Island, Dutch towns.	Long Island, English towns.	Boston, Muddy River.	Boston, Romney Marsh.	Essex County inventories.	Connecticut inventories.	New Haven inventories.	Total.
Total farms listed.....	153	271	31	34	50	15	16	570
No. of farms reporting oxen	36	193	9	27	19	7	11	302
Per cent of all farms reporting oxen	24	72	29	79	38	47	69	53
Total oxen reported...	81	640	20	72	69	20	26	928
Average oxen per farm.	2.2	3.1	2.2	2.7	3.6	2.9	2.4	3.0
Number of farms reporting—								
1 OX	6	5	0	0	1	0	1	13
2 oxen	21	99	8	22	6	5	8	169
3 oxen	5	8	0	0	4	0	1	18
4 oxen	3	47	1	2	4	1	0	58
5 oxen	0	8	0	0	0	0	0	8
6 oxen	1	14	0	2	3	1	1	22
Over 6 oxen	0	12	0	1	1	0	0	14
Largest no. reported...	6	12	4	8	10	6	6	12

some of the Netherlanders also, to the wagon and plough." In New Jersey oxen were used for drawing carts and for breaking up new land, but for sub-

⁷⁴ In *N. Y. Hist. Soc. Collections*, 2d series, I, 166.

sequent ploughing horses were regarded as strong enough.⁷⁵ In Pennsylvania, William Penn⁷⁶ reported (1683), "that people Plow mostly with Oxen."

Horses shared the general neglect which was the portion of all livestock. Perhaps they fared even more hardly than cattle and sheep, because they had no food value. In the Middle Colonies, as well as in New England, horses were allowed to run wild on the commons. In 1671 the city records of New York contained numerous complaints of unmarked horses and cattle running wild in the commons and woodlands of Manhattan.⁷⁷ Josselyn⁷⁸ wrote of New England:

"Horses there are numerous, and here and there a good one, they let them run all the year abroad, and in the winter seldom provide any fother for them, (except it be Magistrates, great Masters and Troopers Horses) which brings them very low in flesh till the spring, and so crest fallen, that their crests never rise again."

Of the Pennsylvania horses Budd⁷⁹ wrote:

"Our *Horses* are good serviceable Horses, fit both for Draught and Saddle, the Planters will ride them fifty Miles a day, without Shoes, and some of them are indifferent good shapes; of which many Ships are freighted yearly from *New-England* with Horses to *Barbadoes*, *Nevis*, and other places; and some Ships have also been freighted out of *Pennsylvania* and *New-Jersey* with Horses to *Barbadoes*; but if we had some choice Horses from *England*, and did get some of the best of our Mares, and keep them well in the Winter, and in Pastures inclosed in the Summer, to prevent there going amongst other Horses, we might then have a choice breed of Horses, which would tend much to the advantage of the Inhabitants."

Horse-raising for the West India market was early developed in New England, where the export of horses began before 1650. The Middle Colonies were also exporting horses in the second half of the seventeenth century.

SWINE.

Swine seem to have adapted themselves to their new environment with less difficulty than any other domestic animal. The English swine imported into New England had arched backs, were excellent runners, and gave a good account of themselves in their encounters with bears, wolves, and rattlesnakes. In the settlements near the coast they fed on clams and other shellfish, and in the woods they found an abundant supply of acorns and other nuts. This fare was supplemented in some instances with Indian corn. Judd⁸⁰ reports that in the Connecticut Valley, where pork-packing for the West India market developed about 1660, the swine were fattened with Indian corn before slaughtering. Van der Donck⁸¹ says of the swine of New Netherland:

"Hogs are numerous and plenty. Many are bred and kept by the settlers in the neighbourhood of the woods and lowlands. Some of the citizens prefer the English breed of hogs, because they are hardy, and subsist better in winter without shelter; but the Holland hogs grow much larger and heavier, and have thicker pork. In some years acorns are so abundant in the woods, that the hogs become fine and fat on the same, their pork frequently being a hand-breadth in thickness. When it is not an acorn year,

⁷⁵ Scot, in *N. J. Hist. Soc. Collections*, I, 298, 314.

⁷⁶ In *Myers's Narratives*, 229. See also Thomas, *ibid.*, 319.

⁷⁷ De Voe, *Market Book*, 43.

⁷⁸ *Mass. Hist. Soc. Collections*, 3d series, III, 338.

⁷⁹ *Good Order Established in Penn. and N. J.* (1685), p. 37.

⁸⁰ *Hadley* (Mass.), 370.

⁸¹ *N. Y. Hist. Soc. Collections*, 2d series, I, 166.

or where persons have not an opportunity to feed their swine on acorns, in those cases they fat their hogs on maize, or Turkey wheat, which, according to the accepted opinions, produces the best pork, being better than the Westphalia pork. The heavy pork is frequently six or seven fingers in thickness, and will crack when cut. The persons who desire to raise many hogs, take care to have sucking pigs in April. When the grass is fine, the sows and pigs are driven woodwards to help themselves. At a year old the young sows have pigs. Thus hogs are multiplied, and are plenty in New-Netherland."

TABLE 6.—*Swine, over one year old.*

[Sources: O'Callaghan, *Doc. Hist. N. Y.*, II, 439 et seq.; IV, 139 et seq.; *Boston Tax Lists in First Report Boston Records* (1876), 128 et seq.]

	Long Island, Dutch towns.	Long Island, English towns.	Boston, Muddy River.	Boston, Romney Marsh.	Essex County inven- tories.	Con- necticut inven- tories.	New Haven inven- tories.	Total.
Total farms listed.....	153	271	31	34	50	15	16	570
No. of farms reporting swine	77	174	13	29	40	14	13	360
Per cent of all farms re- porting swine	50	64	42	85	80	93	81	63
Total swine reported...	185	1,159	29	95	160	88	81	1,797
Average No. per farm.	2.4	6.7	2.2	3.3	4.0	6.3	6.2	4.7
No. of farms reporting—								
1 to 5 swine.....	72	108	13	27	33	7	9	269
6 to 10 swine.....	5	42	0	1	5	5	2	78
11 to 15 swine.....	0	10	0	0	1	2	1	14
16 to 20 swine.....	0	12	0	1	1	0	0	14
Over 20 swine.....	0	2	0	0	0	0	1	3
Largest No. reported...	9	30	5	20	18	15	28	30

OTHER LIVESTOCK.

Goats were a part of the initial equipment of early settlements in New England and in New Netherland. They cost less in Europe, were hardier than cows or sheep, and were easier to transport. The milk and meat which they provided was a welcome addition to the colonists' scanty food supplies. Johnson⁸² remarked in 1650 that at Lynn, Massachusetts: "Goates which were in great esteeme at their first coming, are now almost quite banished. . . ." The examination of inventories of estates shows that goats had become negligible by the end of the seventeenth century. Poultry, including fowls, geese, ducks, and turkeys, were brought from England with the first settlers. Bees seem to have been more common in the Middle Colonies than in New England. In New York, says Denton,⁸³ "you shall scarce see a house, but the South side is begirt with Hives of Bees, which increase after an incredible manner. . . ." Near Philadelphia, says Thomas:⁸⁴

"Bees thrive and multiply exceedingly, . . . the Sweeds often get great store of them in the woods where they are free for any Body. Honey (and choice too) is sold in the Capital City for Five Pence per Pound. Wax is also plentiful, cheap, and a considerable Commerce."

⁸² *Wonder Working Providence*, 73.

⁸³ *Brief Description of New York* (1670), p. 21.

⁸⁴ *Myers's Narratives*, 324.

CHAPTER III.—FARM LABOR, EQUIPMENT, AND LAND.

LABOR SCARCE AND WAGES HIGH.

The scarcity of labor and the resulting high rate of wages are conditions commonly found in new countries, resulting inevitably from the cheapness of land. Thomas ¹ wrote from Pennsylvania in 1698:

“The chief reason why Wages of Servants of all sorts is much higher here than there, arises from the great Fertility and Produce of the Place; besides, if these large Stipends were refused them, they would quickly set up for themselves, for they can have Provision very cheap, and Land for a very small matter, or next to nothing in comparison of the Purchase of Lands in England;”

As early as 1633 Winthrop ² had complained of high wages in the Massachusetts Bay Colony. He says: “The scarcity of workmen had caused them to raise their wages to an excessive rate. . . .” In the years from 1630 to the middle of the century we find the colony and town authorities recognizing the condition and attempting to meet it by fixing maximum wage rates.³

Unsuccessful attempts were made to use the native Indians as farm laborers. Pastorius ⁴ wrote:

“If one of these savages allows himself to be persuaded by a Christian to work, he does it with complaining, shame, and fear, as an unaccustomed act; he looks about him all the while on all sides, lest any of his people may find him working, just as if work were a disgrace, and idleness were an especial inborn privilege of the nobility, which should not be soiled by the sweat of toil.”

The use of negro slaves in tobacco plantations had already begun in Virginia and Maryland before 1700, and slaves were used in New England and the Middle Colonies, usually for domestic service. Occasionally farm labor was performed by negro slaves even in the North. In East New Jersey (1685), Colonel Morris employed 60 or 70 negroes on his manor; another planter had 20 slaves, and a third, 7 or 8.⁵

Indentured servants who were to play an important part in the development of the Middle Colonies in the eighteenth century had not yet appeared in large numbers. Their presence in New England is evident from occasional mention in town records. They were employed more usually as artisans' helpers than as farm laborers. In the larger-scale farming of New Jersey and Pennsylvania, indentured servants were more common. As soon as their time was up they took up lands for themselves and so formed a temporary and constantly fluctuating labor-supply.

¹ *Historical Account*, in Myers's *Narratives*, 328.

² *New England*, I, 138.

³ *New Haven Colony Records*, 36; *Connecticut Colony Public Records*, I, 65; Burt, *First Century of Springfield*, I, 168; *Massachusetts Bay Colonial Records*, I, 109; *Plymouth Colony Records*, I, 128.

⁴ In Myers's *Narratives*, 386. See also *Report of a French Protestant Refugee* (1687), p. 20.

⁵ Scot, in *N. J. Hist. Soc. Collections*, I, 271, 275.

The chief reliance for farm labor, therefore, in the earliest settlements was in the farm family itself, including not only the adult males, but women and children as well. As Johnson wrote, "every one that can lift a hawe [hoe] standing stoutly to their labours." Labor was economized as much as possible. We have seen that the planting of corn among standing trunks of dead trees soon replaced the more thorough methods of clearing. The institutions of common fields and of town herdsman were developed to save labor in farming.

GROUP COOPERATION.

Tasks of unusual difficulty or urgency were accomplished by group cooperation. In New England, where a communal spirit was strongly developed, such cooperation was often compulsory. For example, in Northampton, (Mass.), it was enacted (1718) ⁶

"that Every man from sixteen years old to Sixty; Work one or Two Days (In Each year as the Selectt men for the time being shall Directt) att clearing the commons for Sheep; the men to work in Small companys, att Such Time and In such Place, and under the Inspection of such men as the Selectt men shall a Point, None To fail of any of the above Injuncttions under the Penalty of five Shillings forefitture."

Artisans were impressed to aid the farmers in harvest time. In the Massachusetts Bay Colony in 1646 the following law was passed: ⁷

"Because the harvest of hay, corn, flax, and hemp comes usually so near together that much loss can hardly be avoided, it is ordered and decreed by this court, that the constable of every town, upon request made to him, shall require artificers or handicraftsmen, meet to labor, to work by the day for their neighbor's needing him, in mowing, reaping, and inning thereof, and that those whom they help shall duly pay them for their work, and if any person so required shall refuse, or the constable neglect his office herein, they shall each of them pay to the use of the poor of the town double so much as such a day's work comes unto; provided no artificer, etc., shall be compelled to work for others while he is necessarily attending on like business of his own."

Voluntary cooperation of groups of settlers in heavy tasks, as, for instance, in log-rolling bees, corn-huskings, etc., soon took the place of compulsory cooperation, and in the eighteenth century became a significant feature of colonial agriculture in the North.

FARM EQUIPMENT,—TOOLS AND IMPLEMENTS.

The lack of capital, a characteristic condition in all new settlements, we have already seen illustrated in the scarcity of livestock and food supplies. It is no less strikingly shown in the poverty of farm tools and implements. A list of the tools considered necessary for a settler's family of six persons was given by Josselyn ⁸ in the account of his first voyage to New England, 1638:

"Five broad howes, five narrow howes, five felling axes, two steel hand-sawes, two hand-sawes, one whip saw, set and filed with box, a file and wrest, two hammers, three shovels, two spades, two augars, two broad axes, six chissels, three gimblets, two hatchets, two froues to cleave pail, two hand-bills, nails of all sorts, two pick-axes, three locks and three pair of fetters, two currie combs, a brand to brand beasts with,

⁶ Trumbull, *Northampton*, I, 560. See also *Connecticut Colony Public Records*, II, 139.

⁷ *Records*, II, 180. (Spelling modernized.)

⁸ Mass. Hist. Soc. *Collections*, 3d series, III, 224.

a chain and lock for a boat, a coulter weighing 10 pound, a hand-vise, a pitchfork, one hundred weight of spikes, nails and pins, 120 to the hundred, a share."

This is of course an ideal list and the actual outfit of most settlers was probably far more inadequate. In the inventories of Essex County estates (1635-1664),⁹ the following agricultural tools were mentioned:

"Bills, broad hoe, carts, colter, dung fork, fans, flail, fork tines, forks, grubaxe, hand-bills, harrow tines, harrows, hay knife, hoes, reaping hooks, mattocks, pickaxes, pitchforks, ploughs and ploughirons, rakes, scythes, shovels, sickles, sleds, spades, wheel barrows, wheels."

Hoes, spades, and shovels, scythes and reaping hooks, carts, harrows, and ploughs are most frequently mentioned. A few of the more complete inventories of tools are reprinted below:¹⁰

Estate J. Fairfield, Wenham, 1646 (221 acres of land.): Axes, saws, shovels, harrow tines, an iron spade, 3 sickles, wheelbarrow, garden rake, pitchfork.

Estate E. Lewis, Lynn, 1650 (Land not given.): 2 little harrows, 1 plow with coulter and share, pr. wheels, cart, wain, old plow, yokes, 2 scythes, 4 hooks, a fan, axes, churn.

Estate John Osgood, Andover, 1650 (Land not given.): 3 hoes, 2 carts and wheels, ploughs and iron, a harrow, spade, crow, 3 scythes, 1 mattock, pitchforks.

Estate W. Stevens, Newbury, 1653 (51 acres.): Cart and wheels, plough and plough irons, scythe, axes, spade, shovel, sled, and wheelbarrow.

Estate G. Burrill, Lynn, 1654 (Land not given.): Spades and hoes, plough, cart and wheels, dungcart, pair of harrows.

Estate N. Merrill, Newbury, 1654 (13 acres): Cart, wheels, sled, harrow, spades, mattock, hoes, shovel, fan.

An unusually prosperous farmer at Hartford, Connecticut, left the following tools at his death in 1640: 1 wain, 1 plow, 2 plow irons, 1 gang of harrow tines, scythes, 4 hoes, 2 mattocks, cheese press, fan, axes, wedges.¹¹

PLOWS.

Plows were scarce in the early settlements in New England. The Pilgrims had none for twelve years after their first landing, using only hoes and mattocks for breaking up the soil¹² and in 1636 there were but 30 plows in the whole Massachusetts Bay Colony.¹³ In 1642 hoes were still used in the absence of plows in Rhode Island.¹⁴ The scarcity of plows was alleviated by cooperative action. The owner of a plow went about doing plowing for his neighbors. "Ploughing was a distinct employment," says Felt,¹⁵ "and particular men made it their chief business in its season." Various towns paid bounties to farmers who would buy a plow and keep it in repair.¹⁶ Plows are mentioned in the inventories of only 16 out of 58 estates probated in Essex County, Massachusetts, in the years 1636-1664,¹⁷ and in Hartford (Conn.), in 8 out of 15 inventories in the years 1639-1648.¹⁸

⁹ Quarterly Courts, *Records and Files*, I; *Probate Records*, I.

¹⁰ Essex County Quarterly Courts, *Records and Files*, I, 117, 207, 240, 288, 355, 389.

¹¹ *Connecticut Colony Public Records*, I, 448.

¹² Flint, *Hundred Years' Progress*, in Maine Bd. Agric., *19th Annual Report* (1874), p. III.

¹³ Winthrop, *New England*, I, 246.

¹⁴ Dorr, *Planting of Rhode Island*, 58.

¹⁵ *Ipswich*, 47.

¹⁶ Flint, *Hundred Years' Progress*, in Maine Bd. Agric., *19th Annual Report* (1874), p. III.

¹⁷ Quarterly Courts, *Records and Files*, I; *Probate Records*, I.

¹⁸ *Connecticut Colony Public Records*, I, 442-508.

The Swedish colonists on the Delaware were at first as badly provided with agricultural tools as with livestock. Among the lists of goods sent over on the various expeditions we find tools mentioned very rarely.¹⁹ It seems that they had no oxen for plowing until five or six years after the colony was founded.²⁰ But the Dutch after their occupation in 1656 made vigorous efforts to furnish adequate equipment to their colonists. The following list of tools was sent from Holland in 1662:²¹

“12 ploughshares, with coulter, 1 first-class wheel plough, with its Pulleys, &c., 12 two-prong hay and grain forks, 12 three-prong hay and grain forks, 100 iron teeth to make harrows, 24 best scythes, 24 good reaping hooks, 50 steeled axes, 24 grubbing-hooks, 20 winnowing fans, 25 wheelbarrows, 30 spades, 30 shovels, 30 hoes, 20 iron rakes, 12 hay knives.”

The English colonists who came to the Delaware River 40 years later seem to have begun breaking up the ground with oxen and plows in their first years. The equipment considered necessary for a family of five on 100 acres of land was listed by Budd²² as follows:

“For a Share and Coulter, a Plow-Chain, 2 Scythes, 4 Sickles, a horse Collar, some Cordage for Harness, 2 Stock Locks, 2 weeding Hoes, 2 grubbing Hoes, one cross-cut Saw, 2 Iron Wedges, 1 Iron Pot, 1 frying Pan, 2 falling Axes, 1 broad Ax, 1 Spade, 1 Hatchet, 1 Fro to cleave Clapboard, Shingle and Coopers Timber.”

Among the implements used by Pennsylvania farmers Thomas²³ mentions “Wooden-Tyned Harrows,” “Plow Irons” which had to be mended twice a year, carts, and wains.

CARTS.

The first carts in use by the Swedes, and in New England, also, had wheels which were mere cross-sections of a round hardwood log. Farmers who could not afford carts made use of drags, sleds, or sledges drawn by oxen, horses, or by hand over the grass in summer or over the snow in winter. An early improvement²⁴ “was simply a slender crotched tree, with prongs some seven or eight feet long, to drag on the ground; the trunk serving the purpose of a sled-spire. On the two prongs was placed a box, holding eight or ten bushels, called a car.” The implements of the early settlers were not only few, but heavy, clumsy, and ill-adapted to their purposes. The wooden fork was often shaped by the farmer himself; the cart irons, ploughshares, chains, axes, bill-hooks, scythes, and other cutting instruments were hammered out by the village blacksmith. Trumbull²⁵ says,

“The mouldboard of the old-fashioned plow was a straight piece of wood, sometimes shod with iron; the coulter and share were of iron, and the beam was long, curved and heavy. It was an awkward and ungainly tool, very difficult to manage. Mechanics, called ‘plough wrights,’ manufactured the majority of them, but many were made by carpenters and blacksmiths in every town. . . . Most of the harrows had teeth of wood, hardened by fire, but these were soon discarded for teeth of iron. Carts were large, solid, and heavy. Their wheels were in many instances sawn from solid plank,

¹⁹ Johnson, *Swedish Settlements*, I, 112, 128.

²⁰ *Report of Governor Printz* (1644), in Myers's *Narratives*, 107.

²¹ *N. Y. Doc. Rel. to Col. Hist.*, II, 184.

²² *Good Order Established in Pennsylvania and New Jersey* (1685), p. 8.

²³ In Myers's *Narratives*, 319.

²⁴ Hayward, *Hancock*, N. H., 74; Eggleston, *Husbandry in Colony Times*. *Century Magazine*, XXVII (1883-84), p. 446.

²⁵ *Northampton*, I, 284.

and were used without tires or boxes. Many old shovels had a wooden frame and were shod with iron. Some of them, however, as well as spades, were of iron, except the handle. Hoes were large and heavy, especially the broad hoe. Medad Pomeroy, the blacksmith, made broad hoes, spades, and axes, for each of which he charged five shillings. These cumbersome implements greatly taxed the strength of men and animals."

SIZE OF FARMS.

In New England the land holdings of the first settlers were not large. Occasionally large grants to particular individuals were made by the colonial authorities, or by the trading corporations who preceded them, but the more usual method of land distribution was to communities of settlers. A group of 50 or 100 heads of families got a grant for a township and divided the land among themselves. The first divisions were of planting and meadow, the cattle being herded on the common pastures. Considering the cheapness of land the early divisions are surprisingly small. In Dorchester, Massa-

TABLE 7.—*Size of farms, not including pasturage.*

[Sources: O'Callaghan. *Doc. Hist. N. Y.*, II, 439 et seq.; IV, 139 et seq.; *Boston Tax Lists in First Report Boston Records* (1876), 128 et seq.]

	Long Island, Dutch towns, 1675.	Long Island, English towns, 1675.	Boston, Muddy River 1675.	Boston, Romney Marsh. 1687.	Total.
No. of farms.....	146	259	30	33	469
Total farm acreage.....	5,554.6	4,669.0	406.5	1,235.0	11,865.1
Average acreage	38.0	18.0	13.5	37.4	25.0
No. of farms reporting—					
1 to 20 acres.....	102	183	26	18	329
21 to 40 acres.....	38	62	3	10	113
41 to 60 acres.....	4	8	1	0	13
61 to 80 acres.....	2	4	0	1	7
81 to 100 acres.....	0	1	0	0	1
Over 100 acres.....	0	1	0	4	5

chusetts, the division of 1638 gave an average of 10 acres per family; in Hartford, Connecticut (1640), the average allotment was 27 acres, and in New Haven, Connecticut (1640), 44 acres.²⁶

Inventories of estates give us additional information on the size of farms. In Essex County,²⁷ 42 estates probated in the years 1635–1664 show land holdings ranging from 1 to 234 acres with an average of 50 acres each. Of these holdings, 21, or one-half, were under 20 acres, and 32 (76 per cent) were under 50 acres. In the Connecticut colony²⁸ 13 estates probated 1639–1648 show landholdings ranging from 6 to 221 acres and averaging 60 acres each. Of these 5 (39 per cent) were under 20 acres and 7 (54 per cent) under 50 acres. It should be remembered that these figures do not include pasture land which was largely held in common and when included in the inventories was designated as commons for so many cows and not specifically in acres. The size of farms (not including pasturage) in 10 towns on Long Island and in 2 districts of Boston is shown in table 7.

²⁶ For a fuller discussion of these allotments see chapter V, pp. 52–54.

²⁷ Essex County Quarterly Courts, *Records and Files*, I, *Probate Records*, I.

²⁸ *Connecticut Colony Public Records*, I, 442–508.

The difference between the land holdings in the five Dutch and the five English towns is remarkable. In the former, Brooklyn, Boswyck (Bushwick), Midwout (Flatbush), Amersfort (Flatlands), and New Utrecht, the average taxable land area in 146 farms was 38 acres, but in the English towns (Huntington, Southhold, Flushing, Newtown, and Brookhaven) 260 farms averaged only 18 acres of taxable land. The explanation is not found in smaller-scale agriculture in the English farms, for the returns of live-stock in the same tax lists show an average of 24 animals per farm in English towns, as against only 14 per farm in the Dutch towns. If pasture land had been included, the English farms would have been much larger than the Dutch. It was on the latter that the more intensive type of agriculture was found. In Holland agriculture was considerably more advanced in the early seventeenth century than in England, and, besides, the geographical position of the Dutch settlers on the western end of Long Island gave them ready access to the New York market. Only two of the English towns were on the western end of the island; the others were in the central part and on the eastern end, at distances varying from 35 to 90 miles from Manhattan Island. The English settlers confined their attention more largely to the raising of cattle, which they fed on the tax-exempt commons.

There are interesting differences in the size of farms in the two farming districts of Boston, Muddy River and Romney Marsh and the islands. The former is now one of the richest suburban residential districts in America. But by a strange irony of fate it was originally assigned to the poorer inhabitants of Boston who had no cattle.²⁹ Romney Marsh (now Chelsea, a relatively undesirable suburb), was assigned to the wealthy settlers who had servants to till their lands.³⁰

LAND UTILIZATION.

The information available on the distribution of land into arable, mowing, and pasture is very fragmentary. According to the Boston tax lists of 1687, the farms in Muddy River had 63 per cent of their area in pasture, and in Romney Marsh, 72 per cent. We have occasionally rather full descriptions of land in the inventories of the larger estates. For example, the inventory of N. Foote,³¹ of Wethersfield (1646), showed 169 acres in 9 parcels, of which 21 acres were in tillage, 37 in meadow, 81 in upland, 27 acres in swamp, and 14 acres in two house lots. The estate of T. Dewy (1648), totaled 49 acres in seven parcels, distributed as follows: Houselot, $1\frac{1}{4}$ acres; meadow, $18\frac{1}{2}$ acres; tillage, 12 acres; upland, $17\frac{1}{2}$ acres. In the Essex County inventories tillage is specifically mentioned 12 times in lots ranging from 2 to 33 acres. The average amount was 9 acres. In 20 estates meadow was specifically mentioned in amounts averaging 12 acres per farm.

While no precise conclusions can be drawn from such fragmentary data, it appears that in New England and on Long Island the amount of arable and mowing land managed by the typical farm family was not greater than 40 nor less than 10 acres. Planting land, the inventories of estates indicate,

²⁹ *Muddy River and Brookline Records*, I, 13, 14.

³⁰ Chamberlain, *Chelsea*, I, 123.

³¹ *Connecticut Colony Public Records*, I, 462.

occupied less acreage than mowing. Since livestock was generally pastured in common herds in the woods and on unimproved land, the acreage of pasturage pertaining to each farm can not be estimated. Regarding New Jersey and Pennsylvania no comparable statistical records are available. We know that the system of land tenure favored large estates and a few records of large-scale agriculture have been preserved. Among Penn's colonists were a number of rich men who began large-scale operations. The letters of early settlers³² of East New Jersey show several cases of plantations, outside the settled towns, of several thousand acres each, cultivated with the aid of negro slaves or with indentured servants.

³² Scot, in *N. J. Hist. Soc. Collections*, I, 271-277; 287-295.

CHAPTER IV.—TRADE IN AGRICULTURAL PRODUCTS.

IMPORTS OF FOOD.

Neither New England nor the Middle Colonies had in the seventeenth century a great agricultural staple for export, such as the tobacco of Virginia or the rice and indigo of the Carolinas, but nevertheless the exchange of agricultural products seems to have held a prominent place in their economic life. At the very first we find all the early settlements importing food. As we have already pointed out, colonies established by trading companies, such as the Plymouth Colony, the Massachusetts Bay Colony, and those established by the Dutch and Swedish West India Companies on the Hudson and Delaware Rivers, were intended to live by fishing or by trading for furs with the Indians, and it was expected that they would import a part at least of their food supplies. Higginson (1629) advised all immigrants to Massachusetts Bay to bring a year's stock of food with them.¹ Van Tienhoven² wrote in 1650:

“And as it is found by experience in New Netherland that farmers can with difficulty obtain from the soil enough to provide themselves, with necessary victuals and support, those who propose planting Colonies must supply their farmers and families with necessary food for at least two to three years, if not altogether it must be done at least in part.”

The scarcity of food in the early years of some of the settlements was pitiful. For three years the Plymouth Colony was on the verge of starvation and maintained life only by strict rationing of its grain, by purchases from the Indians, and by making extensive use of the fish, game, and wild food plants.³ In the earliest settlements on Massachusetts Bay, and also at Providence and at Hartford, we find scarcity of food, especially cereals, repeatedly mentioned until about 1640.⁴ In May 1648 there was not enough grain in the Massachusetts Bay Colony to sustain the inhabitants for two months, and in consequence all export of grain was prohibited.⁵ The Swedish colony on the Delaware, for 20 years after its founding in 1638, was dependent on outside sources of food supplies. Governor Printz wrote back to Sweden in 1647: “The reason that so many people died in the year 1643 was that they had then to begin to work, and but little to eat.”⁶ Hunting was the chief reliance of the first settlers of West Jersey, but powder and shot became so scarce that they had to live on fish.⁷ Penn's colonists at Philadelphia had

¹ In Young's *Chronicles*, 263.

² In O'Callaghan *Documentary History of New York*, IV, 33.

³ Bradford, *Plymouth Plantation*, 138, 156, 157.

⁴ Winthrop, *New England*, I, 128, 219; Johnson, *Wonder Working Providence*, 115, 210; *Rhode Island Records*, I, 98; Winthrop, *Life and Letters*, II, 302.

⁵ *Massachusetts Bay Colony Records*, II, 240.

⁶ In Myers's *Narratives*, 121.

⁷ Smith, *New Jersey*, 155.

the easiest time of all. They purchased corn and beef from the old inhabitants (i. e., the Swedes), who had by this time a flourishing agricultural settlement, and imported some provisions also from New York, New England, and Rhode Island.⁸ Penn wrote back to England in 1683,⁹ when the new colony had been established less than a year,

“the greatest hardship we have suffered, hath been Salt-Meat, which by Fowl in Winter, and Fish in Summer, together with some Poultry, Lamb, Mutton, Veal, and plenty of Venison the best part of the year, hath been made very passable.”

PURCHASES OF CORN FROM THE NATIVES.

Purchases of Indian corn from the natives were frequent and must have proved important additions to the colonists' scanty food-supplies. All along the North Atlantic coast the Indians were found living by agriculture as well as by hunting and fishing. The Indian corn, whose cultivation they taught the colonists, was their most important crop. Very early in the history of the New England settlements we find recorded purchases of corn from the Indians. For example, in 1630 the Massachusetts Bay colonists got 100 bushels from the Indians on Cape Cod¹⁰ and in 1634 they bought 500 bushels from the Narragansets.¹¹ At Hartford on the Connecticut River in 1637 the supply of corn in the hands of the natives was considered so important that the trade was forbidden to individuals in the colony.¹² It would seem that by 1641 purchases of Indian corn for resale had begun, for in that year a penalty of 4d. per bushel was imposed on all who buy corn from the Indians, provided “they buy it not for to supply their own necessity.”¹³ Van Tienhoven¹⁴ wrote from New Netherland in 1650:

“If no wheat or rye can be had for bread, maize can be always had in season from the Indians at a reasonable price.”

The early Dutch settlement on Delaware Bay bought corn and beans from the Indians, as did their Swedish successors.¹⁵ The colonists of East New Jersey not only got corn, but venison and pork from the Indians.¹⁶ The pork must have been from swine escaped from other settlements, running wild in the woods.

BEGINNING OF REGIONAL SPECIALIZATION.

The trade in agricultural products among the original European settlements in America seems at first to have been sporadic—the relief of occasional scarcity at one point from a surplus at another. Thus, New England in 1633¹⁷ bought sheep from the Dutch of New Netherland, and a genera-

⁸ Penn, *Further Account of Pennsylvania*, in Myers's *Narratives*, 266. See also Penn. Magazine of History, VII, 271; Acrelius, *New Sweden*, 36.

⁹ Letter to the Free Society of Traders, in Myers's *Narratives*, 240.

¹⁰ Dudley's Letter to the Countess of Lincoln, in Young's *Chronicles*, 323.

¹¹ Winthrop, *New England*, I, 175.

¹² *Connecticut Colony Public Records*, I, 11.

¹³ *Ibid.*, I, 68.

¹⁴ In O'Callaghan *Documentary History of New York*, IV, 33.

¹⁵ DeVries in Myers's *Narratives*, 18; *Report of Governor Printz*, op. cit., 99.

¹⁶ Scot, in N. J. Hist. Soc. *Collections*, I, 302.

¹⁷ Winthrop, *New England*, I, 124.

tion later we find New England supplying sheep as well as beef, flour, wheat, butter, and cider to New Netherland.¹⁸ Such also was the nature of the exchanges by which New England relieved the food scarcity in New Sweden.¹⁹ But there was also in progress in these early years the beginnings of agricultural trade based on the special natural resources of particular regions. The peculiar advantages of New England for maritime pursuits were early apparent. Its imports of corn and wheat, at first from the Southern and later from the Middle Colonies, were not entirely due to inability to raise a sufficient supply of these grains at home, but in part at least to the realization of the advantages of specialization in fishing, trading, and ship-building.

The import of corn meal from Virginia began almost as soon as the New England settlements were founded. In 1631, 700 bushels of Virginia corn were received at Mason's plantation on the Piscataqua River,²⁰ and in 1634, when immigration had greatly swelled the population of the Massachusetts Bay Colony, 5,000 bushels of corn were brought from Virginia in half a year.²¹

TRADE WITH THE WEST INDIES.

The trade of New England and the Middle Colonies with the English, French, and Dutch islands in the Caribbean Sea was a central feature of the economic life of the English settlements in America. The sugar planters in the West India Islands were engaged in specialized agriculture. Their cash crop was so profitable that they could not afford to use land or labor in grazing cattle or in cultivating food crops. On the other hand, New England and the Middle Colonies had no agricultural staples. Their products were the same as those of Northern Europe and consequently, except on occasions of crop failure in Europe, there was no market there for either colonial grain or meat. But there was a good market for such products in the West Indies, and so the general agriculture or mixed husbandry of the colonies north of Maryland supplemented the specialized farming of the sugar plantations in the seventeenth century. In the late eighteenth and early nineteenth centuries the rice and cotton plantations of the South furnished a similar market for the products of northern agriculture.

The trade relations of other English colonies with New England were early regarded as of particular importance. Says an early writer on colonial economy: ²²

"The other *American plantations* cannot well subsist without *New England*, which is by a thousand leagues nearer to them than either *England* or *Ireland*; so that they are supplied with provisions, beef, pork, meal, fish, &c., also with the lumber trade, deal boards, pipe staves, &c., chiefly from *New England*. Also the *Caribbee Islands* have their horses from thence. It is then, in a great part, by means of *New England*, that the other plantations are made prosperous and beneficial."

¹⁸ *Description of the Towne of Manhaddens*, in Jameson's *Narratives*, 423.

¹⁹ *Reports of Governor Rising*, 1654, 1655, in Myers's *Narratives*, 136, 158; see also Keen, *New Sweden*, in Winsor's *America*, IV, 455, 474.

²⁰ Deane, *Capt. John Mason*, 62.

²¹ *Calendar of State Papers, Colonial*, I, *America and the West Indies* (1574-1660), p. 175.

²² *Brief Relation of New England* (1689), in *Mass. Hist. Soc. Collections*, 3d series, I, 98.

The economic development of New England, also, was greatly forwarded by the West India trade. It yielded a "favorable balance," i. e., exports were larger than imports, and with this surplus and the carrying charges, for the New Englanders used their own vessels, they were able to purchase manufactured goods from Europe.

EXPORTS OF GRAIN, PROVISIONS AND HORSES FROM NEW ENGLAND.

Just when exports of agricultural products from New England to the West Indies first began is uncertain and relatively unimportant. Occasional shipments were made between 1640 and 1650.²³ In the latter year trade to the Barbados was important enough to incur official prohibition by an Act of Parliament.²⁴ But the reports of food scarcity and the imports from Virginia show that there was no actual surplus in New England for export before the middle of the century. In 1650, Johnson²⁵ points out, in somewhat exaggerated language, the significant transition from a condition of food importation to food exportation in the Massachusetts Bay Colony. He mentions wheat and peas, beef, pork, butter, and cheese among the export products and adds:

"and those who were formerly forced to fetch most of the bread they eat, and beer they drink, a hundred leagues by Sea, are through the blessing of the Lord so encreased, that they have not only fed their Elder Sisters, Virginia, Barbados, and many of the Summer Islands that were prefer'd before her for fruitfulness, but also the Grand-mother of us all, even the firtil Isle of Great Britain, beside Portugal hath had many a mouthful of bread and fish from us, in exchange of their Madeara liquor, and also Spain."

Ten years later Governor Winthrop²⁶ wrote from the Connecticut colony:

"I must lett you first know that, through the great blessing of the Lord vpon the labours of the people heere, there is a comfortable supply of all sorts of corne & provisions necessary for subsistence, & that not only for themselves (the present inhabitants), but also for many others; so as it is not now as in our beginnings, when we were necessitated to bring wth us provitions sufficient for a long tyme, but now the country doth send out great store of biscott, flower, peas, beife, porke, butter, & other provisions to the supply of Barbados, Newfoundland, & other places, besides the furnishing out many vessells & fishing boats of their owne, so as those who come over may supply themselves at very reasonable rates."

In the reports of the Commissioners in New England (1665)²⁷ corn, beef, pork, and horses are given as exports from New England, and in 1675 butter, cheese, flour, peas, biscuit, are mentioned in addition to beef, pork, and horses.²⁸ About the middle of the seventeenth century there seems to have been a short period intervening between two periods of the importation of breadstuffs, when New England had a surplus of wheat and corn for export. The fertile lands of the Connecticut Valley were yielding good crops of grain,

²³ Exports of horses, beef, meal, and pease are mentioned in 1648, in *Description of the Province of New Albion*, in *Force, Tracts*, II, 5. See also Weeden, *Social and Economic History of New England*, I, 151.

²⁴ Act of October 3, 1650. See also *Mass. Colony Records*, IV, pt. I, p. 40.

²⁵ Johnson, *Wonder Working Providence*, 247.

²⁶ *Letter*, in *Mass. Hist. Soc. Collections*, 5th series, VIII, 65.

²⁷ *Calendar of State Papers, Colonial*, V, *America and the West Indies* (1661-1668), p. 346.

²⁸ *Ibid.*, IX (1675-1676), p. 221.

which was exported from Connecticut ports to Boston. As early as 1644 the general court at Hartford took steps to secure better marketing conditions for Connecticut grain. Prices were low and the Massachusetts Bay and Plymouth Colony farmers were complaining of the Connecticut competition. Consequently the court granted a monopoly of the export of grain to a number of merchants who were to endeavor to find a foreign market for it.²⁹

The period of grain surplus in New England was short, for the blast which began to affect the wheat crop after 1664 had seriously lessened the wheat exports from Connecticut by 1680. The Indian war of 1674–1676 caused a decrease in grain production. Many farmers were kept under arms and a number of settlements in the Connecticut Valley were temporarily abandoned.³⁰ In Connecticut the scarcity of grain resulting from the war was so serious that exports were prohibited except under special license.³¹ At this time grain imports from Virginia were resumed.³²

The period 1675–1680 marks the end of the export of New England grain. New competitors began to enter the West India markets. Hudson Valley wheat was being shipped regularly and in considerable quantities before 1680,³³ and by 1690 the colonists in Pennsylvania and New Jersey were sending wheat, not only to the West Indies but to New England itself.³⁴ Wheat and wheat products, flour, and ship bread, are still mentioned among New England exports after 1680, but should be regarded as chiefly reexports of wheat from the Middle Colonies.³⁵

The exports of horses and salted meat from New England, which also began about 1650, continued not only throughout the seventeenth but even to the end of the eighteenth century, indicating a greater adaptability of that region to grazing than to tillage. In 1660 Samuel Maverick spoke of many thousand "Neate Beasts and Hoggs" being slaughtered every year for export to Newfoundland, Barbados, Jamaica, and for provisioning ships.³⁶ The export of provisions is a subject of frequent mention in the official reports from New England after 1665.³⁷

New England horses were much in demand in the West Indies not only for riding but also for furnishing motive power for the sugar-mills. Connecticut horses were known as the best in New England. They were shipped from Norwich, New London, and New Haven. Horses were exported also from Boston, Salem, and Providence. The importance of the trade is shown by the early attempts to subject it to legislative control. Massachusetts, in 1649, fearing lest its breeding stock should be weakened, forbade the export

²⁹ *Connecticut Colony Public Records*, I, 116.

³⁰ See Mathews, *Expansion of New England*, 56–58.

³¹ *Connecticut Colony Public Records*, II, 270.

³² *Calendar of State Papers, Colonial Series*, IX, *America and the West Indies (1675–1676)*, p. 366.

³³ See p. 45.

³⁴ See *Letter of Dr. More* in Myers's *Narratives*, 290; Scot, *East New Jersey*, I, 270; *Letters from Pennsylvania*, in *Penn. Magazine of History*, IV (1880), pp. 194, 199.

³⁵ Lord Cornbury complained to the Board of Trade in 1708 that the New Englanders bought wheat in New York with clipped money, carried it home, ground and bolted it, and sold the flour to the West Indies. See *N. Y. Documents Relative to Colonial History*, V, 58.

³⁶ *Briefe Description of New England*, 47.

³⁷ See *Calendar of State Papers, Colonial Series*, V, *America and the West Indies (1661–1668)*, and later volumes.

of mares. In Connecticut a law of 1660,³⁸ in order to prevent shipment of stolen animals, provided that all horses should be registered with "the marks both naturall and artificiall, as also the colour and age of ye beast" with the authorities of the town from which they came.

TRADE OF THE MIDDLE COLONIES.

The Middle Colonies, as we have seen, shipped some grain to New England, but their principal market was the Dutch, French, and English islands in the West Indies. Thither were shipped principally wheat and horses. The shipment of wheat from New Netherland to the West Indies is chronicled by Jogues³⁹ in 1643, who wrote:

"Shortly before I arrived there, three large ships of three hundred tons each had come to load wheat; two found cargoes, the third could not be loaded, because the savages had burnt a part of the grain. These ships had come from the West Indies, where the West India Company usually keeps up seventeen ships of war."

Denton (1670)⁴⁰ records exports of wheat as well as of horses, beef, pork, pease, and tobacco from New York, and a few years later (1678), Governor Andros⁴¹ estimated the wheat exports from New York at 60,000 bushels yearly. New Jersey and Pennsylvania seem to have had a surplus of wheat almost from the very first years of their settlement. Scot⁴² says of East New Jersey:

"This with the Province of *New York*, being the *Granary* or *Store house* of the *West Indies*, without which *Barbadoes* and the *Leeward Islands* could not subsist; Yea, *New England* is forced to come there every year for Corn."

Horses seem to have been the first commodity exported from Penn's colony,⁴³ but in a few years it had a surplus of grain, also, for export. The general nature of the export trade of Pennsylvania and its connection with farming is expressed in a letter of an early settler (1691):⁴⁴

"The Country-men finding the profit now coming in, do clear away the Woods, Plow and improve their Lands in Corn, Hemp and Flax, and enlarge themselves in great stocks of Horses, Oxen, Cows, Hogs, and some Sheep, so that they can, and do now spare great quantities of Corn to our Neighbour Provinces, which formerly we were forc'd to be beholding to, the Merchants making great Merchandizes, viz. for the West Indies. I understand Ten or Twelve Sail went loaden thither the last Summer with Bisket, Flower, Beef and Pork."

THE MARKET FOR AGRICULTURAL PRODUCTS IN THE TOWNS.

The three chief centers of internal trade in farm products were Boston, Philadelphia, and New York. From these ports shipments were made to the West Indies and merchant and fishing fleets were provisioned. Boston, with about 7,000 inhabitants,⁴⁵ was the largest urban center in the colonies. The

³⁸ *Connecticut Colony Public Records*, I, 356.

³⁹ In Jameson's *Narratives*, 260.

⁴⁰ *Brief Description of New York*, 3.

⁴¹ O'Callaghan, *Documentary History of New York*, I, 90.

⁴² In N. J. Hist. Soc. *Collections*, I, 270.

⁴³ Penn, *Letter to the Free Society of Traders* (1683), in Myers's *Narratives*, 229.

⁴⁴ *Letters from Pennsylvania*, in *Pennsylvania Magazine of History*, IV (1880), p. 200.

⁴⁵ Winsor, *Memorial History of Boston*, II, 492.

population was mostly engaged in maritime pursuits, but included also some farmers. For example, the tax list of 1687 shows 177 cows kept within the limits of the city proper, not including those in the outlying farms of Chelsea and Brookline.⁴⁶ There are many indications that the Boston market was an important factor in the agriculture of the surrounding settlements. Its stimulating influence was apparent as early as 1632. In the Plymouth Colony, where the new immigration caused the price of corn and cattle to rise, "by which many were much enriched, and commodities grue plentiful,"⁴⁷ this trade was not regarded as an unmixed blessing. It caused dispersion of population.⁴⁸

"For now as their stocks increased, and the increse vendible ther was no longer any holding them together, but now they must of necessitie goe to their great lots, they could not other wise keep their katle."

Beef cattle were an important item in the trade of Boston with neighbouring towns. Johnson⁴⁹ wrote of Ipswich, 1650:

"the Lord hath been pleased to increase them in Corne and Cattell of late; Insomuch that they have many hundred quarters to spare yearly, and feed, at the latter end of Summer, the Towne of Boston with good Beefe:"

The cost of transportation of corn overland was so high that for many years there was little trade in that commodity with the back country. Of Sudbury, 19 miles west of Boston, Johnson⁵⁰ remarked (1650): "the great distance it lyes from the Mart Towns maketh it burdensome to the Inhabitants to bring their corne so far by land," and the same complaint⁵¹ was made regarding Andover (20 miles from Boston, 15 miles from Salem). A few years later, however, Maverick⁵² describes the trade between Rehoboth and Boston as follows:

"It is not aboue 40 Miles from Boston, betweene which there is a Comone trade, carrying & recarrying goods by land in Cart and on Horseback, and they have a very fayre conveyance of goods by water also."

In the same work are mentioned a number of towns which supplied Boston with firewood and building materials.

MARKETS AND FAIRS.

New York had less than 4,500 people in 1700⁵³ and Philadelphia about 5,000.⁵⁴ The trade of these cities with the surrounding country districts seems to have been principally in beef cattle. Under Dutch rule two fairs had been established to be held annually in New Amsterdam, on October 15 for cattle and on November 1 for hogs,⁵⁵ and in 1656 a market space was set

⁴⁶ Boston, *Reports of the Records, First Report*, 91 et seq.

⁴⁷ Bradford, *Plymouth Plantations*, 293.

⁴⁸ *Loc. cit.*

⁴⁹ *Wonder Working Providence*, 96.

⁵⁰ *Ibid.*, 196.

⁵¹ *Ibid.*, 249.

⁵² *Brief Description of New England* (1660), p. 44.

⁵³ O'Callaghan, *Documentary History of New York*, I, 691, gives the census figure for 1703 as 4,436.

⁵⁴ Scharf and Westcott, *Philadelphia*, I, 140.

⁵⁵ De Voe, *Market Book*, 17.

aside and a weekly market was provided for by the governor.⁵⁶ The growth of trade was rapid enough to require the establishment of six other market places before 1700.⁵⁷ Livestock were driven to the New York market from Long Island and New Jersey⁵⁸ and from a number of towns in western Connecticut. In 1659, when a new cattle market was established notices were sent to towns as far distant as Southold on Long Island and Milford in Connecticut.⁵⁹ The consumption of fresh meat in New York was increasing rapidly toward the end of the seventeenth century. In 1684, according to the city records, not more than 400 neat cattle were killed yearly for local consumption and in 1698 about 3,000.⁶⁰

Fairs and markets were established in Philadelphia in the early years of the settlement. Like their European prototypes, these institutions were designed to bring the producers and consumers together under conditions of free competition and to prevent abusive practices by middlemen. So we find in Philadelphia the market regulations of 1693,⁶¹ after specifying the time and place where markets should be held, provided:

“That all sorts of Provision brought to this town to sale, viz, flesh, fish, tame fowl, eggs, butter, cheese, herbs, fruits, roots, etc., shall be sold in the aforesaid market place, and in case any of the aforesaid provisions should come to the town of Philadelphia on other days that are not market days, yet that they be sold in the market under the same circumstances, regulation, and forfeitures as upon the days on which the market is appointed, and in case any of the said provisions be exposed to sale in any other place in this town, then the said market shall be forfeited the one half to the poor of Philadelphia, the other half to the clerk of the market.

“That the market begin and be opened at the ringing of the bell, which shall be rung from the first day of the 2nd month, April, to the first day of September between the hours of six and seven, and from the first day of September to the first day of the second month, April, between the hours of eight and nine, and in case any of the aforesaid provision or any sort of marketing be sold, flesh excepted before the ringing of the bell, unless it be for his Excellency, Governor in Chief, or Lieut. Governor, the same shall be forfeited one-half to the poor, the other to the clerk of the market.

“That no person cheapen or buy any of the afore mentioned provision by the way as it comes to the market, upon forfeiture of the same, besides the forfeiture of six shillings, both to the buyer and seller, one-half to the poor, the other to the clerk of the market.

“That no hucksters or persons to sell again shall buy or cheapen any of the afore mentioned provision, until it has been two hours in the market after the ringing of the bell, upon forfeiture of the same, and six shillings, one-half to the poor, the other half to the clerk of the market.”

The consumption of fresh meat in Philadelphia in summer, according to Thomas⁶² was “Twenty Fat Bullocks every Week . . . besides many Sheep, Calves and Hogs.”

In New England, a weekly market was established in Hartford in 1643,⁶³ and annual fairs were held in Hartford, New Haven, and Providence.⁶⁴ In

⁵⁶ *Ibid.*, 36.

⁵⁷ *Ibid.*, 44, 70, 77, 85, 109, 125.

⁵⁸ Danckaerts, *Journal*, 157; Scot, in *N. J. Hist. Soc. Collections*, I, 313.

⁵⁹ De Voe, *Market Book*, 38.

⁶⁰ *Ibid.*, 87.

⁶¹ Reprinted in *Pennsylvania Magazine of History*, XXIII (1899-1900), p. 408. (The spelling, capitalization, etc., are modernized.)

⁶² *Myers's Narratives*, 318.

⁶³ *Connecticut Colony Public Records*, I, 91.

⁶⁴ *New Haven Colony Records*, I, 130; Weeden, *Early Rhode Island*, 120.

Boston, Thursday was appointed as a weekly market day in 1633, and in 1696 Tuesdays and Saturdays were added.⁶⁵ The municipal control of the sale of produce does not seem to have been popular either among the city or country folks there. A visitor in 1709⁶⁶ reported:

“The Town of *Boston* is plentifully supply'd with good and wholesome Provisions of all sorts, not inferior to those in England, . . . but though the Town is so large and populous, they could never be brought to establish a Market in it, notwithstanding several of their Governours have taken great Pains to convince the Inhabitants how useful and beneficial it would be to 'em; but the Country People always opposed it, so that it could not be settled: The Reason they give for it is, if Market Days were appointed, all the Country People coming in at the same Time would glut it, and the Townspeople would buy their Provisions for what they pleased, so rather chuse to send them as they think fit; and sometimes a tall Fellow brings a Turkey or Goose to sell, and will travel through the whole Town to see who will give most for it, and is at last sold for 3 s. 6 d. or 4 s. and if he had stay'd at Home, he could have earned a Crown by his Labour, which is the customary Price for a Day's Work:”

⁶⁵ Weeden, *Social and Economic History of New England*, I, 406.

⁶⁶ Uring, *Voyages and Travels*, III.

CHAPTER V.—LAND TENURE.

THE LAND SYSTEM OF NEW ENGLAND.

The English settlements in New England, with the exception of New Hampshire, were organized as corporate colonies. The trading companies by which they were established and governed received from the English Crown extensive grants of land, which they in turn granted to individuals and to groups of settlers. Grants from the Crown directly to individuals were practically unknown in New England, the notable exception being the grant of the Province of Maine, embracing land between the Piscataqua and Kennebec Rivers, to Sir Ferdinando Gorges in 1639.

The land policy of the New England colonies was democratic and far-sighted. Its guiding motive was not profit, but methodical occupation of the company's territory by actual settlers and the development of its great resources, not for the benefit of a few but in the interest of the whole community. Such a policy necessarily involved "great restraint upon the individual wills of settlers, with a view to the greatest safety and prosperity of all. . . ." ¹ Such aims are apparent not only in the plan of community settlement, the predominant feature of the New England land system, but also in the rather infrequent grants to individuals.

GRANTS TO INDIVIDUALS.

In Southern New England, grants by the colonial authorities directly to individuals were rarely of large areas, and in the aggregate they made up but a small part of the total disposable area. Egleston's ² investigations show that in the Massachusetts Bay Colony, 1631-1656, there were about 100 grants to individuals, of which the largest was 3,200 acres; only a few exceeded 500 acres and the majority were not more than 250 acres. It should be noted, also, that such grants to individuals were uniformly in consideration either of services already rendered to the community or of services expected in the future. Thus magistrates, ministers, and school-teachers were compensated by gifts of land and artisans were encouraged to set up saw mills, salt works, and manufactures of iron, copper, and gunpowder.

GRANTS TO COMMUNITIES.

Most of the area of New England was settled in village communities. Such communities were usually formed by the splitting off of a number of families from one of the older settlements. The first step was for a group of heads of families to secure a tract of unoccupied land. In Massachusetts a

¹ Egleston, *Land System of the New England Colonies*, in J. H. U. *Studies in Hist. and Pol. Sci.*, IV (1886), Nos. 11, 12, p. 27.

² *Ibid.*, p. 24.

town grant was usually secured from the general court, but in Rhode Island and Connecticut the lands were purchased from the Indians without charter or grant, the title being confirmed later by royal charters.³

The original grantees or purchasers were known as proprietors. Group settlements were the rule on land purchased from the Indians as well as on town grants.⁴ In New Haven, Connecticut, and in the neighboring settlements of Guilford and Milford, the lands "were purchased by their principal men, and held in trust for the people, who, after contributing to pay the expenses of surveying, etc., drew lots proportioned to their contributions."⁵ The lands of the earliest settlements on the Connecticut River, Hartford, Wethersfield,

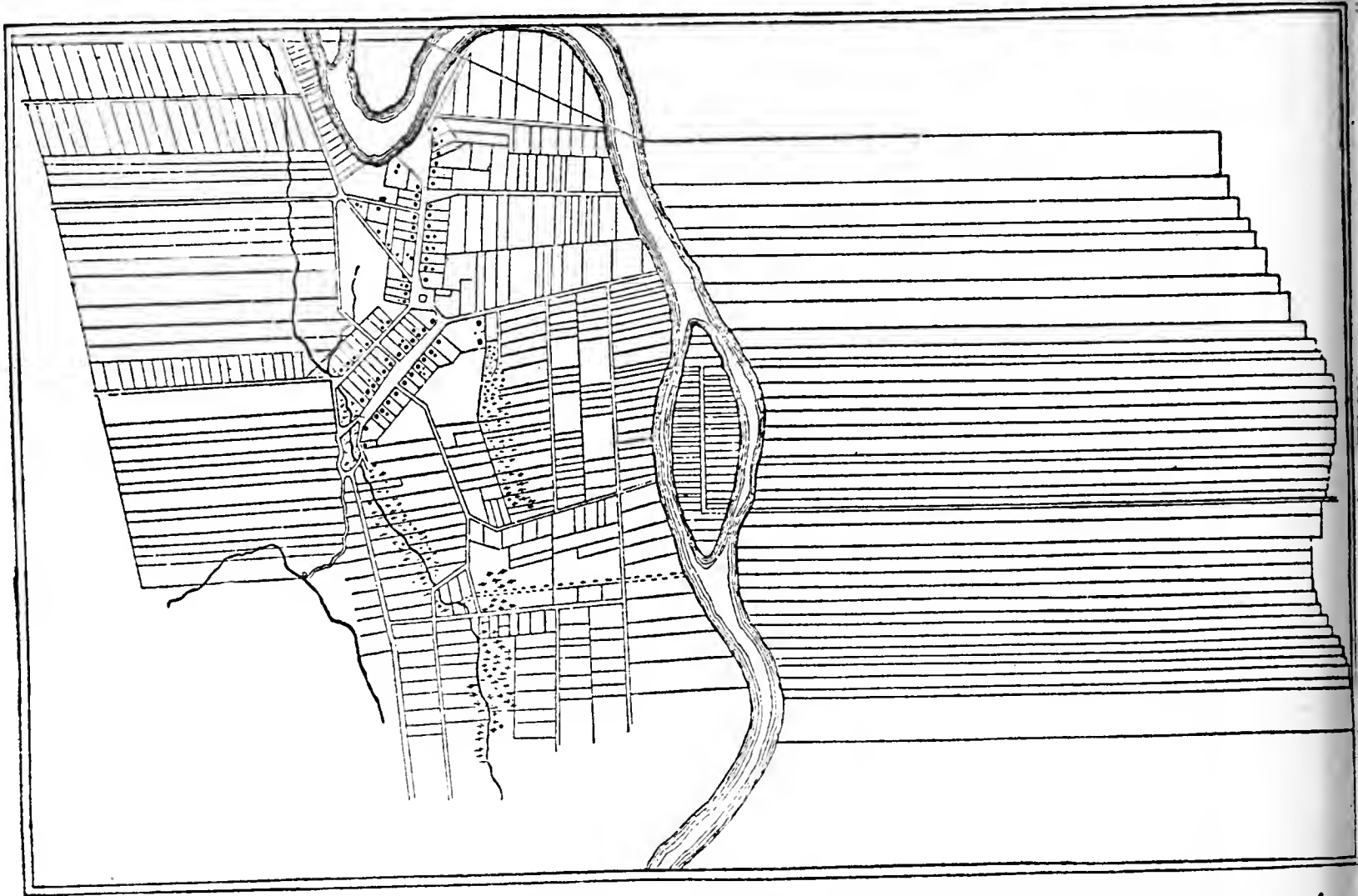


FIG. 1.—Early allotments in Wethersfield, 1640–41. (From Andrews, *River Towns of Connecticut* in *Johns Hopkins University Studies in Hist. and Pol. Sci.*, vol. VII, Nos. 7–9, p. 5.)

The above represents the lands recorded under date 1640–41. On the extreme left are the West Fields; on the right, across the river, Naubuc Farms, known also as the Three-Mile Purchase; in the center the Great Meadow and Plain with their various divisions. The latter allotments can not in every case be absolutely ascertained, as the records are often vague and faulty.

and Windsor, were similarly purchased from the natives.⁶ In order to prevent overlapping of purchases and confusion of titles, purchases from the natives were soon subjected to the control of the colonial authorities. In

³ Egleston, in *J. H. U. Studies in Hist. and Pol. Sci.*, IV (1886), Nos. 11, 12, p. 9.

⁴ The Narragansett country in Rhode Island was an exception. See Channing, *The Narragansett Planters* in *J. H. U. Studies in Hist. and Pol. Sci.*, IV (1886), No. 3, p. 12.

⁵ Dwight, *History of Connecticut*, 84.

⁶ Andrews, *River Towns of Connecticut*, in *J. H. U. Studies in Hist. and Pol. Sci.*, VII (1889), Nos. 7–9, pp. 32–36.

New Haven it was ordered (1639) "that no planter or planters shall make purchase of any lands or plantation from the Indians or others for their own private use or advantage, but in the name and for the use of the whole plantation."⁷ (Spelling modernized.) Similar laws were later passed in the Connecticut and Rhode Island colonies.⁸

LAYING OUT THE TOWN; THE HOME LOTS.

The tract on which settlement was to be made, known as the "town grant," varied in area from 4 to 10 square miles. Near the center of the

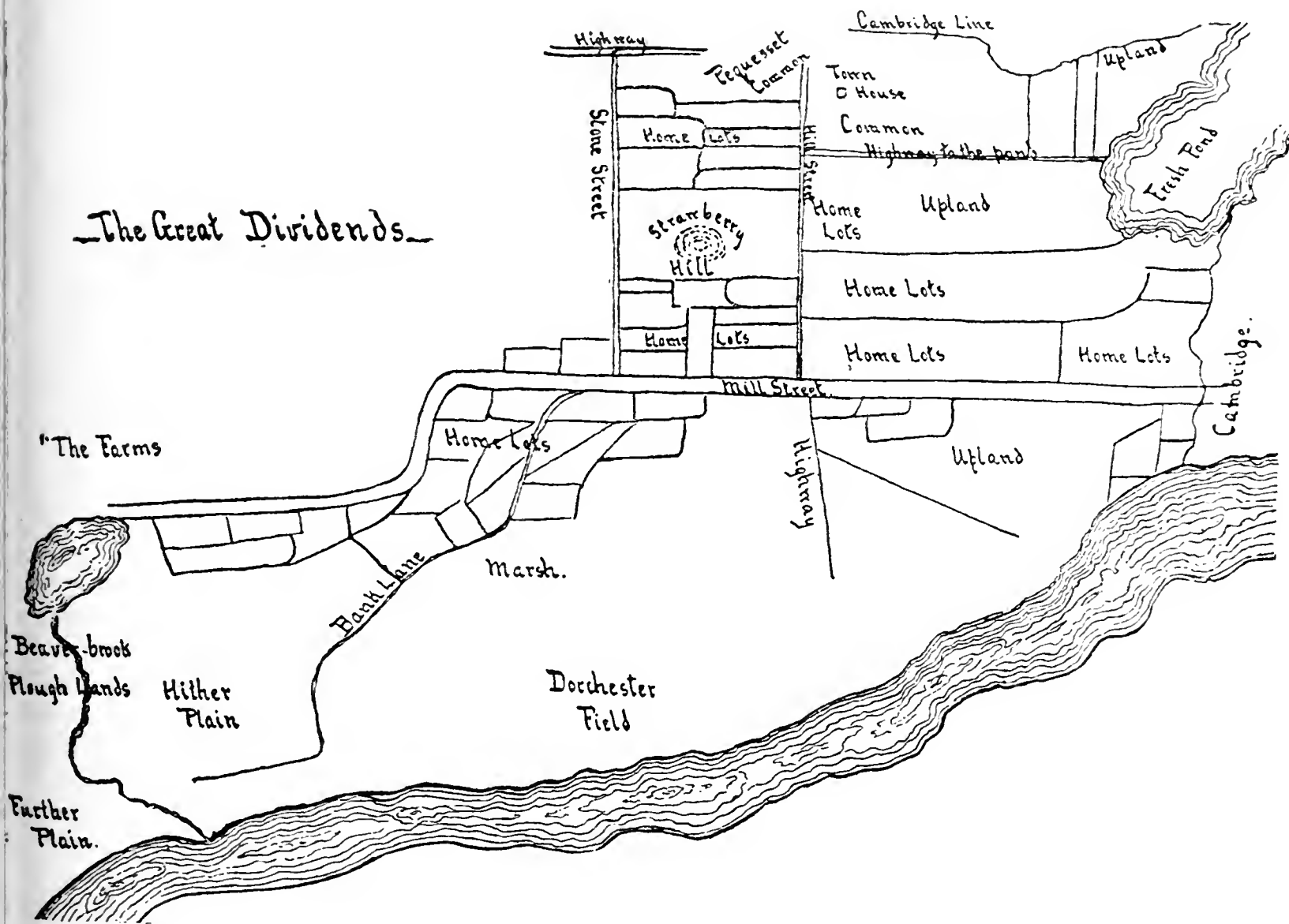


FIG. 2.—Map of Watertown, Massachusetts, 1636. (From Maclear, *Early New England Towns*, 81.)

grant a village was laid out. The site for the village green and meeting-house, often a hilltop, was first determined and then streets were laid out, and on both sides of the streets were set off the house-lots of the settlers. The order for the laying out of Yarmouth, Maine (1681), was as follows:

"That ten acres of plain land be laid out in a square lot for a meeting house, burial place, minister's house lot, market place and school; around this ten acre lot, a street four rods wide, and on this street, house lots of half an acre each, and in some convenient place, a common field equal to six acres to each house lot."

⁷ *Colony Records*, 27.

⁸ See *Conn. Colony Public Records*, I (1663), p. 402; *Rhode Island Records*, I (1658), p. 403.

⁹ Russell, *History of North Yarmouth*, in *Maine Hist. Soc. Collections*, 1st series, II, 172.

The home lots were plots of ground "sufficient for a dwelling house and outbuildings, a door yard and garden, with perhaps a small inclosure for feeding cattle or raising corn."¹⁰ They varied in size from town to town and were not uniform even within the same town. The smallest were sometimes only one-quarter acre, from this they increased to 6, 8, or 10 acres. In a few towns home lots of 20 and even 30 acres are found.¹¹

DIVISION OF UPLANDS AND MEADOWS.

The next step was the division of the arable and mowing lands, the so-called "uplands and meadows." Large fields of several hundred acres each were roughly surveyed and then divided into strips which were numbered and distributed among the settlers by lot. Each settler's portion was, therefore, actually a "lot." The maps of land distribution in the ancient towns show a remarkable regularity of arrangement.¹²

"The small oblong strips are, in nearly every case, grouped together in a few long rows or tiers. These tiers are often parallel, but sometimes one tier will be at right angles to another. The cause of this regularity is that the strips or lots are laid off from one or two (sometimes more, according to the size of the field), main base lines, usually a river or highway; each field is thus a parallelogram divided into tiers of small, usually equal, parallelograms."

A rather striking case of the early use of the rectilinear survey, later adopted in our national land system, is found in Cohasset, Massachusetts (1670):¹³

"The town was originally laid out, as near as might be, in Squares, whose sides should be one mile. It was divided into four parts, called divisions, by lines running nearly east and west, the whole length of the town, each division being a mile in width. These divisions were separated into parts or squares, by lines one mile from each other, running at right-angles with the lines of divisions. It was intended by the proprietors of Cohasset, that roads, if possible, should run with the lines which marked the divisions and squares, and spaces of land for that purpose were accordingly left. But when the roads were really made, it was found necessary to vary much from the original design, owing to the immoveable rocks and other obstructions, falling in the way."

THE RULE OF DISTRIBUTION.

The quantity of land allotted to each proprietor was determined by a rule of distribution which was in many cases agreed to in advance of settlement. The home lots were occasionally of equal size,¹⁴ but in the distribution of other land holdings the right of some to receive more than others was invariably recognized. There were two criteria of distribution: (1) the investment of the settler in the original enterprise, and (2) his ability to use land. Under the first were included his contribution to the expense of removal

¹⁰ Adams, *Origin of Salem Plantation*, in *Essex Institute Historical Collections*, XIX (1882), p. 171.

¹¹ See examples given by Egleston, in *J. H. U. Studies in Hist. and Pol. Sci.*, IV (1886), Nos. 11, 12, p. 52; MacLear, *Early New England Towns*, in *Columbia University Studies in Pol. Sci.*, XXIX (1908), No. 1, p. 81.

¹² Ford, *Colonial Precedents of Our National Land System*, in *Wisconsin University Bulletin, History Series*, II (1909-10), p. 12.

¹³ Flint, *History and Description of Cohasset*, in *Mass. Hist. Soc. Collections*, 3d series, II, 109.

¹⁴ Temple and Sheldon, *Northfield*, 66; Temple, *Whately*, 16.

from England or to the purchase of the land from the Indians and the cost of surveying it. The second criterion was based on the value of the planter's "estate," and in some cases also upon the number of heads in his family. In the determination of the amount of a man's estate, not merely a valuation of his property was taken into consideration, but also his contribution, past or prospective, to the success of the joint enterprise. It should be noted, also, that the roll of estates was used as a basis of taxation, as well as of land distribution,¹⁵ so that

"wealthy planters consented to receive less than their proper share of lands, and were held to pay less than their ratable proportion of expenses; while the young man, for the sake of receiving a larger allotment of land, agreed to pay a proportionate part of the plantation taxes."

In Guilford, Connecticut, the planters were first divided into four classes, viz.: those of £50, £100, £250, and £500 estates,¹⁶ and then it was ordered

"that all lands shall from time to time be allotted or divided, unto all and every of the planters here, both according to his or their estates put in, and according to the number of heads in each family, viz—for every hundred pound estate, five acres of upland and six acres of meadow, and for every head three acres of upland and half an acre of meadow and so proportionably for fifty pounds estate, none being reckoned for such heads to any man but himself, his wife and children."

In Northampton,¹⁷ 20 acres of meadow were allotted to each £100 of estate, and in addition each head of a family received 15 acres and 3 acres for each son. In New Haven, at the first division of land, the rate was 5 acres for each £100, and 2½ acres for each person in the planter's family.¹⁸

The principle that those should have most land who could make best use of it is clearly expressed in the following town vote in Springfield, Massachusetts (1636):¹⁹

"It is agreed that after this day we shall observe this rule about dividinge of plantinge ground and meddowe in all plantinge ground to regard chiefly persons who are most apt to use such ground: and in all meddowe and pasture to regard chiefly Cattell and estate, because estate is like to be imp'vd in cattell, and such ground is aptest for theyr use: and yet we agree that noe p'son that is master of a lott though he have noe cattyle shall have less than three acres of mowinge ground: and none that have coves, steeres or yeare olds shall have under two akers apiece and all horses not less than fower akers and this order in dividng meddowe by cattyle to take place the last of May next."

RELATIVE SIZE OF ALLOTMENTS.

The working out of the rules outlined above caused some inequalities, but in general the allotments before 1700 produced a fairly even distribution of land. In Hartford,²⁰ Connecticut, the first distribution (1640), was of 3,311 acres among 121 proprietors, giving each on the average 27 acres. The largest farm granted was 160 acres; 41 grants were from 1 to 10 acres and 70 grants from 1 to 20 acres. In New Haven, Connecticut, we have more complete records of the distribution. Soon after the settlement of the colony

¹⁵ Temple, *Whately*, 16.

¹⁶ *Town Records*, in Steiner's *Guilford*, 49.

¹⁷ Trumbull, *Northampton*, I, 22.

¹⁸ *Colony Records*, 192.

¹⁹ *Town Records*, in Burt's *First Century of Springfield*, I, 158.

²⁰ *Hartford Town Votes*, in Conn. Hist. Soc. *Collections*, VI, 22-24.

in 1638, house lots were apportioned, and in January 1640 land was distributed of three different kinds, upland, land in the neck, and meadow, i. e., salt marsh. According to the rule of division agreed upon, each proprietor received of upland, 5 acres for each £100 of his estate and $2\frac{1}{2}$ acres for each person in his family; of meadow, 5 acres for each £100 of estate and $\frac{1}{2}$ acre for each head; and of land in the neck, an acre for every £100 and a half acre for each head.²¹

The result was to give to the 123 grantees average allotments of 23 acres of upland, $4\frac{1}{2}$ acres in the neck, and $16\frac{1}{2}$ acres of salt marsh. In October of the same year a second division of 8,151 acres of upland was made, which yielded average allotments of 66 acres each, bringing up the total of the average holding in four parcels to 110 acres.²² There was of course considerable disparity in the holdings. Some were as low as 10 acres, while the highest share was close to 1,000 acres, but on the whole a considerable degree of equality prevailed. There were only 9 persons whose allotments were above 300 acres and 34 whose holdings ranged from 100 to 300 acres.

In Hadley, Massachusetts, the original distribution was according to estates, no account being taken of the size of families. Each proprietor received an 8-acre home lot and in addition $25\frac{1}{4}$ acres of meadow for each £100 of estate; 7 lots of meadow, aggregating 1,578 acres, were distributed among 48 proprietors, giving to each 7 parcels totalling, in the average, 33 acres. The wealthiest proprietors (10) received the maximum amount, $50\frac{1}{2}$ acres; 17 received amounts from 26 to 40 acres; and 21 got from 10 to 25 acres.²³

TENDENCIES TOWARD CONCENTRATION OF LAND HOLDINGS.

Through purchase, marriage, and inheritance, proprietary rights tended to accumulate in a few hands, with the result that later distributions of lands, particularly those of the eighteenth century, showed more inequality. But even before 1700 the tendency to the concentration of land in fewer hands was evident. In 1650 the general court of Connecticut noted²⁴ that "there is creeping in, in severall Townes and plantations within this Jurisdiction, a great abuse of buying and purchasing Home Lotts and laying them together, by meanes whereof great depopulations are like to follow," The towns attempted to prevent the accumulation of land holdings in a few hands, and at the same time tried to protect themselves against the intrusion of unwelcome associates by imposing restrictions on the alienation of land. In Springfield it was voted (1638)²⁵

"that no man that is possessed of a lot by the dispose of the Plantation, shall after sell it to another, of the Plantation, that has a lot already; neither shall any man possess two men's Lots, without the consent of the Plantation or such as shall be appointed, till they have been inhabitants five years in the Plantation: But If any desire to sell his Lots, he may to a (stranger), provided the said Plantation shall not disallow of the

²¹ *New Haven Colony Records*, 27.

²² The table of allotments to each proprietor is given in *New Haven Colony Records*, I, 91-93.

²³ Judd, *Hadley*, 26, 30.

²⁴ *Conn. Colony Public Records*, I, 562.

²⁵ *Town Records*, in Burt's *First Century of Springfield*, I, 164. (Spelling modernized.)

said Stranger. But in case they shall not allow the admission of the said stranger then the Plantation shall buy the said lots as indifferent men shall apprise them."

In general, during the early years the consent of the town was necessary for the sale of lots, and in the case of contemplated sale to non-residents the town reserved the right of preemption.²⁶

The task of the committees in charge of distribution was arduous. Inequalities inevitably arose, some lots being more desirable than others because of greater fertility or of nearness to the village. In order to secure equality the fields were sometimes minutely subdivided, each grantee receiving a number of small strips in various portions of the field. In other cases an additional quantity of land was granted to compensate for poor quality. In general, the records of distribution show an admirable spirit of fairness and willingness to remedy injustices.

THE COMMON FIELDS—PROPRIETORS COMMONS.

The allotments were not fenced separately, but instead they were surrounded by a common fence, to the construction and maintenance of which each proprietor contributed in proportion to his allotment. Each proprietor cultivated his own lot or lots, subject to restrictions on the choice of crops and the dates of planting and harvesting. In New Haven it was ordered (1640) "thatt after this yeare none shall plant Indian corne in the neck, butt onely sow itt with English."²⁷ In 1647 the town authorities were petitioned to regulate crops grown in the common fields, but refused, referring the matter to the grantees for decision among themselves.²⁸ The custom of admitting the cattle to graze on the stubble after the crop had been harvested made a common crop policy inevitable. In the early days most of the improved land of the community was inclosed in common fields, but as holdings were consolidated by purchase, separate inclosures became practicable.²⁹ The proprietors continued to pasture their cattle in common long after the tillage fields had become separately inclosed.³⁰

TOWN COMMONS.

It is important to realize that the common fields so far described, whether in tillage or pastured, were not accessible to all the inhabitants of the town. They were "common" only to the original proprietors, and to those persons who through purchase, marriage, or inheritance had acquired proprietary rights therein. They were known, therefore, as "proprietors' commons." In addition, however, there were other fields which were open to the use of all the inhabitants, the "town commons." They included all the land of the original grant not yet divided among the proprietors nor allotted to later comers. On such common fields any inhabitant might pasture his animals, and from such tracts wood, stone and earth were taken, subject to

²⁶ *Rhode Island Records*, I, 126; *Hartford Town Votes* (1635), in *Conn. Hist. Soc. Collections*, VI, 1; Steiner, *Guilford*, 50.

²⁷ *Colony Records*, 48.

²⁸ *Ibid.*, 367.

²⁹ See Paige, *Cambridge* (Massachusetts), 36.

³⁰ For a discussion of common pastures see pp. 21-23.

regulations by the town authorities. Later distributions of land were made out of town commons, not only to proprietors but to new inhabitants as well. Often the newcomers had already "squatted" on the undivided lands and the distribution of land to them was in the nature of formal recognition of their title. In Cambridge we find,³¹ in the allotment of 1689, those inhabitants who had "no rights in the land but who had settled there were to have a share amounting to 12 acres, more or less apiece." In Salem, also, there were many squatters living on the undivided land. "Many of this class had been servants who, gradually acquiring a little money, obtained from the town the privilege of building upon the undivided land by paying to the town a small rent."³² In Hartford, Connecticut, certain cottagers "were granted lots to have only at The Towns Courtesy with liberty to fetch wood and keep swine or cows by proportion on the common."³³

COMMONERS AND NON-COMMONERS.

The commoners, or proprietors, constituted a privileged group in the town. They were "the original grantees or purchasers of the land of the town and their legal heirs, assigns, or successors, with such as from time to time they chose to add to their number."³⁴ They were a land community within a political community, controlling not only the management of the proprietors' commons, but also the distribution of the undivided lands, which were used in common by all the inhabitants. At first, when the proprietors constituted almost the entire population, there could be no serious conflict between them and the later arrivals, for the land community and the political community were practically identical. It made little difference, then, whether the management of the common fields was directed by the town meeting or by the meeting of proprietors. In Wethersfield nearly all the business relating to land was done in town meeting. So also in the towns in New Haven Colony and in many towns in Massachusetts. In Rhode Island boards of proprietors appear at an early date.³⁵ But as the settlement grew by influx of outsiders the non-commoners came to equal and finally to surpass the proprietors in numbers. In the gathering of the political community, the town meeting, the newcomers struggled hard to wrest from the proprietors the control over the land. Such struggles became frequent before 1700 and occupied a large place in the histories of the town in the next century. Eventual adjustment of the difficulty occurred in one of three ways:³⁶ (1) by increasing the number of commoners; (2) by granting certain lands to newcomers without accompanying rights of commonage; or (3) by inclusion of the newcomers with the original proprietors in a general division of lands to all the inhabitants, but granting no right to non-commoners in further divisions.

³¹ MacLear, in *Columbia Univ. Studies in Political Science*, XXIX (1908), No. 1, p. 86.

³² *Ibid.*, p. 102.

³³ *Hartford Town Votes*, in *Conn. Hist. Soc. Collections*, VI, 19.

³⁴ Osgood, *American Colonies*, I, 461.

³⁵ *Ibid.*, *American Colonies*, I, 464.

³⁶ Eggleston, J. H. U. *Studies in Hist. and Pol. Sci.*, IV (1886), Nos. 11, 12, p. 41.

THE DISADVANTAGE OF COMMON FIELDS.

The disadvantages of cultivating strips in common fields were so serious that the arable land was soon separately inclosed. Much land was wasted in the numerous roads by which each proprietor gained access to his particular allotments. The lots were small and scattered and often their great length in proportion to their width prevented cross-harrowing or cross-ploughing. The distance of the common field from the home lots caused loss of time in coming and going. The restrictions on the choice of crops were undoubtedly annoying, but so little was then known about crop rotations that it seems doubtful whether they imposed a serious check on agricultural progress. The scattering of the allotments of meadow or mowing land was more marked than in the case of uplands or planting land. Earliest land records of Groton, Massachusetts,³⁷ show that 1,656 acres of upland were held by 28 persons in 77 parcels, while 507 acres of meadow were held by 20 persons in 135 parcels. Each settler held on the average 59 acres of upland in 2 or 3 parcels and 19½ acres of meadow in 5 parcels.

“The waste of time and insecurity of property from Indian thefts, when not within the immediate view of its owners, were constant sources of loss and vexation to the holders of these minute estates. Their exchange and surrender, so as to create larger and more manageable freeholds, afforded a great part of its occupation to the Town Meetings of two generations, and were a check to agricultural improvements. The wearisome hours of the ‘Town’s Quarter Day,’ were in great part due to the unskilled plan of the first townsmen.”³⁸

The great economy of labor secured by herding cattle in common was to some extent offset by the difficulty in controlling breeding and the dangers of the rapid spread of parasites and diseases.

THE END OF THE COMMONS.

The tendency of proprietary rights to accumulate in a few hands has already been noted. As holdings were thus consolidated the transition from common pastures to separate inclosures was made relatively easy. The “undivided lands” or town commons were rapidly reduced in size by successive allotments to the proprietors and to newcomers whom the latter admitted to the community. By the end of the eighteenth century common lands had practically disappeared, although a few vestiges are even now to be found in New England towns.³⁹ The ultimate disposition of the commons often shows commendable public spirit on the part of the proprietors. In Framingham, Massachusetts (1785), the proceeds of the sale of the last land went to the public library;⁴⁰ in Ipswich the commoners transferred all their interest in the undivided lands to the town to help pay the debts contracted during the Revolutionary War.⁴¹ In Watertown, in 1742, the proprietors devoted the proceeds from the sale of the last lands “to be a public stock for the use of said Watertown for ever, to be let out upon

³⁷ In Greene’s *Early Land Grants of Groton*, 17 et seq.

³⁸ Dorr, *Planting of Rhode Island*, 43. See also Trumbull, *Northampton*, I, 549.

³⁹ Adams, *Germanic Origin of New England Towns* in J. H. U., *Studies in Hist. and Pol. Sci.*, I (1882), No. 2, p. 33.

⁴⁰ Barry, *Framingham*, 135.

⁴¹ Felt, *Ipswich*, 17.

interest, and the interest thereof to be devoted to help support the Gospel Ministry and the Grammar and English School in said Watertown for ever.⁴²

ORIGIN OF THE NEW ENGLAND VILLAGE COMMUNITY.

The similarity of the home lots and the common fields of the New England towns to the field system of the English manors has often been noted and attempts have been made to trace the origin of the New England land system to the institutions of the ancient Teutons which Tacitus described.⁴³ The resemblances, which are in many cases striking, are certainly not explainable by conscious imitation by the New England colonists of the tribal customs of their primitive ancestors. It was rather a case of the adaptation of familiar land practices to the peculiar conditions which confronted the English colonists in their new homes. They wanted compact settlements, partly because of the danger of Indian attacks and also in order to maintain their religious life and social intercourse. Hence the village green and the home lots. The scarcity of labor made separate inclosures impossible, and so they very naturally introduced in their new homes the common fields of the old country.

SIGNIFICANCE OF THE NEW ENGLAND LAND SYSTEM.

The New England land system, with its community settlements, had important social and political results, as has often been shown by political historians. It developed habits of group action and maintained a compact social life. But on the economic side it was no less important. It provided an effective and equitable method for the distribution of large areas of land directly to the cultivators, in parcels proportioned to their ability to use land. In Southern New England and in New Hampshire⁴⁴ in the years in which the system of town grants was in operation, roughly speaking, before 1725, land speculation was practically unknown. The system of common fields, as we have seen, had obvious defects from the standpoint of agricultural progress and of farm management. The restrictions on the selection of crops in the common fields and on the dates of planting and harvesting, had they been long continued, might have prevented experiments in crop rotation, but as a matter of fact they were soon abandoned. The scattering of the lots in various fields prevented effective use of the farmers' time and equipment, but this also was but temporary, being remedied by the consolidation of holdings. On the other hand, the advantages of the system were permanent.

THE PRIVATE LAW OF REAL PROPERTY IN NEW ENGLAND.

The rules of law regarding the transfer of land in the hands of private individuals harmonized with the main principles of the system of town grants. The transfer of land by purchase and sale was facilitated by very

⁴² *Proprietors' Book*, 186, in *Watertown Records*, I.

⁴³ See Adams, *Germanic Origin of New England Towns*, in J. H. U., *Studies in Hist. and Pol. Sci.*, I (1882), No. 2, pp. 12, 16.

⁴⁴ In Maine the large grants from the Crown and from the council at Plymouth produced unusual conditions. That province, however, was very sparsely settled before 1700, and consequently the treatment of land tenure there belongs more properly in Part II.

early laws establishing simple forms of conveyance and providing for the recording of deeds.⁴⁵ In the transmission of estates by inheritance the colonists soon began to set aside the English custom of primogeniture. Equal distribution to all heirs, or the reservation of only a double portion to the eldest son, soon became the general practice in making wills, and attempts were made to establish this custom as the law of intestate estates. Thus, in Massachusetts it was provided in the *Liberties* of 1641:⁴⁶

“When parents dye intestate, the Elder sonne shall have a double portion of his whole estate reall and personall, unlesse the Generall Court upon just cause alleadged shall judge otherwise. When parents dye intestate haveing noe heires males of their bodies their Daughters shall inherit as Copartners, unles the Generall Court upon just reason shall judge otherwise.”

In Connecticut it was provided in 1639⁴⁷ that the estates of intestates should be divided among the heirs by an administrator under the supervision of the public court “as in equity they shall see meet.” In practice, this grant of discretionary power resulted in giving the eldest son a double portion of the real estate and younger children, sons and daughters, single shares apiece, following the custom of those who made wills.⁴⁸ In 1699 the Connecticut colony incorporated its rules and customs of inheritance into a statute law,⁴⁹ which, however, was vacated by the King in Council in 1727, although the similar law of Massachusetts had been confirmed. After much controversy and delay the Connecticut statute was finally recognized in 1742.⁵⁰

In Rhode Island, in 1718, primogeniture was abolished, having been found “to be very wrongful and injurious to the public good,”⁵¹ but 10 years later this act was repealed.⁵² Although the English custom was thus legally maintained, land even in the Narragansett country, the region of large estates, seems to have been more or less equally apportioned among heirs.⁵³

The reasons for the modification of English rules of inheritance in the colonies were largely economic, viz., the cheapness of land and the scarcity of other forms of wealth. In defense of the Connecticut statute of 1699, Governor Talcott⁵⁴ argued:

“That this is a reasonable custom will appear if it be considered that in the first settlement of the Country lands were the least valuable part of men’s estates, and so should be much rather subject to a division than his chattels. Land was plenty and chattels scarce; so that without a division of the lands as well as chattels, very little could be assigned to any except the eldest son. And the land itself must have remained unoccupy’d, if it had not been divided. It was esteem’d much in favour of creditors when they were not obliged to take lands in satisfaction of their debts, . . . and it remains so to this time. It was inhabitants and not land that was wanting; yea, it was common in dividing lands

⁴⁵ *New Haven Colony Records* (1654), p. 215; *Rhode Island Records*, I, 54 (1638); *Connecticut Colony Public Records*, I, 552 (1650).

⁴⁶ *Mass. Hist. Soc. Collections*, 3d series, VIII, 230. See also Massachusetts (Province) *Acts and Resolves*, I (1692), ch. 14, p. 44.

⁴⁷ *Public Records*, I, 38.

⁴⁸ *Conn. Hist. Soc. Collections*, IV, 175, 187, 189.

⁴⁹ *Public Records*, IV, 307.

⁵⁰ *Ibid.*, VII, 191, note.

⁵¹ *Rhode Island Records*, IV, 238.

⁵² *Ibid.*, 417.

⁵³ Channing, in *J. H. U. Studies in History and Political Science*, IV (1886), No. 3, p. 16.

⁵⁴ *Instructions to Jonathan Belcher* (the agent of the colony in England), in *Conn. Hist. Soc. Collections*, IV, 144.

among the inhabitants to oblige them to hold the land they had once accepted, that they might bear the burthen of Taxes and fencing. And much of our lands remain yet unsubdued, and must continue so without the assistance of the younger sons, which in reason can't be expected if they have no part of the inheritance, for in this poor country, if the landlord lives, the tenant starves; few estates here will let for little more than for maintaining fences and paying taxes. By this custom of dividing inheritances, all were supply'd with land to work upon, the land as well occupy'd as the number of hands would admit of, the people universally employ'd in husbandry;"

LAND TENURE IN THE MIDDLE COLONIES.

The characteristic features of the New England system, community settlement and freehold tenure in small parcels, were present in the Middle Colonies, but not so uniformly predominant. Leaving New York aside for the moment, where institutions of the Dutch introduced a peculiar factor, let us consider the conditions of land tenure in the Provinces of East and West Jersey and Pennsylvania. These were proprietary colonies; in them the land as well as the privileges of government were granted by the King, not to trading corporations as in New England, but to individuals who were called proprietors. A proprietary grant, such as William Penn had from Charles II, was regarded as a private estate. It could be transmitted by inheritance to heirs; it could be sold, leased, or mortgaged. So the proprietors became not only political governors, they were investors and often speculators in land.

TERMS OF DISTRIBUTION OF LAND IN PENNSYLVANIA AND NEW JERSEY.

The enormous tracts of land, such as Penn and the New Jersey proprietors held, were of no use unless they could be peopled. Consequently the proprietors advertised for settlers, putting out statements of the attractions of the country, accompanied by the terms on which land would be distributed to newcomers. In New Jersey, the Concessions and Agreements of the Lords Proprietors, of 1664,⁵⁵ provided that every freeman who should transport himself before January 1665 and provide himself with a musket, ammunition, and six months' provisions, should receive 150 acres of land, and for every able-bodied man servant similarly equipped who should be transported with him the master was to receive another 150 acres. Servants were promised 75 acres of land at the expiration of their term of service. A premium was put on early migration by the allotment of lesser amounts of land to those settlers who arrived in the following years. Actual settlement was required as a condition of all grants, it being provided that one able-bodied servant, or two weaker ones, should be maintained upon every 100 acres. The land was to be held in free and common socage, but subject to the payment of a yearly quitrent of one-half penny per acre to the lords proprietors, beginning after March 1670.

In West New Jersey a similar agreement was drawn up in 1677⁵⁶ giving 70 acres to the earliest arrivals and for their able-bodied servants, and less

⁵⁵ Reprinted in Smith's *History of the Colony of New Jersey*, 512 et seq.

⁵⁶ *Concessions and Agreements*, in New Jersey Archives, I, 244.

amounts for those who came later. Quitrents were to be paid, and actual settlement, or at least the residence of servants on the land for a term of years, was a condition of every grant.

William Penn, the proprietor of Pennsylvania, introduced the unique practice of selling land to prospective settlers. In 1681, before leaving England, he sold over 300,000 acres in amounts of from 250 to 10,000 acres to 250 persons, mostly well-to-do Quakers of Southern England.⁵⁷ His plan of land distribution he outlined as follows:⁵⁸

"My Conditions will relate to three sorts of People: 1st. Those that will buy: 2dly. Those that take up Land upon Rent; 3dly. Servants. To the first, the Shares I sell shall be certain as to number of Acres; that is to say, every one shall contain Five thousand Acres, free from any Indian incumbrance, the price a hundred pounds, and for the Quit-rent but one English shilling or the value of it yearly for a hundred Acres; and the said Quit-Rent not to begin to be paid till 1684. To the second sort, that take up Land upon Rent, they shall have liberty so to do, paying yearly one penny per Acre, not exceeding Two hundred Acres. To the third sort, to wit, Servants that are carried over, Fifty Acres shall be allowed to the Master for every Head, and Fifty Acres to every Servant when their time is expired."

Purchasers of 1,000 acres or more were not to have over 1,000 acres in a single tract, unless within 3 years they settled a family on each thousand acres. Every grant must be settled within 3 years on pain of forfeiture.⁵⁹

THE SIZE OF GRANTS.

As Penn and the other heads of proprietary governments were careful to reserve the right to dispose of their lands on more liberal terms if they wished, there was little uniformity in the size of grants. On the whole, they seem to have been somewhat larger than in New England. In the towns in northeast New Jersey which were settled from New England, the normal size of grants was between 100 and 200 acres, with only occasionally a grant as large as 300 acres. In the Monmouth Grant the allotments were somewhat larger. Outside the towns, there were extensive transfers of land, and a few large estates were founded which were cultivated with negro slaves. But in general in the early years the "soil of East Jersey was being taken up in comparatively small allotments by bona-fide settlers. Anything like a system of large estates was unknown, nor was land speculation being carried on to any great extent, except of course by the lords proprietors themselves."⁶⁰

After the purchase of the Province of East Jersey by the 24 proprietors, the taking up of land on a large scale began. In the Elizabethtown tract, 38 surveys (1683-1703) were for 500 acres or more, and of these, 23 were over 1,000 acres and 8 over 2,000 acres. Not only in this section, but throughout the whole province, a period of comparatively large surveys began in 1683, the holders sometimes being proprietors themselves, sometimes outside investors. Provision was made for the subdivision of the large grants, for

⁵⁷ Myers's *Narratives*, 219.

⁵⁸ *Some Account of Pennsylvania*, in Myers's *Narratives*, 208.

⁵⁹ *Conditions and Concessions of 11 July 1681*. Reprinted in Hazard's *Annals of Penn.*, 516 et seq.

⁶⁰ Tanner, *The Province of New Jersey*. Columbia University *Studies in History, Economic and Public Law*, XXX, 44. Unless otherwise indicated facts regarding New Jersey have been drawn from this monograph.

not many of the original proprietors intended to retain their holdings intact or to manage them as large estates.

In West New Jersey the holdings of bona-fide settlers were somewhat larger than in the eastern province. The earliest adventurers, indeed, received only 70 acres for each servant transported. But each of the 100 proprietors was entitled to an original allotment of 5,200 acres plus a second distribution of 5,000 acres. Among the earlier settlers a large share held proprietary rights; later arrivals bought fractions of proprietary rights or merely purchased land from a proprietor. Few grants were for less than 100 acres, while those of 200, 300, and even 500 acres were not rare.

A large part of the interior lands of New Jersey were held by the West Jersey Society, a business company organized in 1691 to make profit from land sales. It held at one time one-fifth of the area of West Jersey, including the Minnisinck Province of 200,500 acres, lying between the Delaware River and the Blue Mountains, and all of Cape May County. The company sold land in general in larger tracts than those of the earlier settlers.

QUITRENTS.

The annual payment by the grantee of land of a sum prescribed by the proprietor, in lieu of all services, was a uniform feature of the land system of all proprietary colonies. As a form of revenue, quitrents proved uniformly unsatisfactory. The payments were evaded whenever possible and were always tardy. In Pennsylvania, quitrents were "a perpetual source of dissatisfaction," and in New Jersey, as well as in New York, violent resistance was sometimes offered to the claim of the landlord.⁶¹ In West Jersey the proprietors did not attempt to collect quitrents, but in the eastern province the disputes between the proprietors and the settlers on the Elizabethtown and Monmouth tracts, beginning before 1700, led in the eighteenth century to long periods of agrarian discontent and disorder.⁶²

LAND TENURE IN NEW NETHERLAND AND NEW YORK.

The patroonships of New Netherland were so unique a feature of early land tenure that they have received more attention than their influence on agricultural conditions would seem to justify. According to the Privileges and Exemptions of 1629,⁶³ anyone who should within 4 years plant a colony of 50 souls over 15 years old might be acknowledged a patroon of New Netherland. Each patroon was permitted to take up a tract of land "four leagues [16 English miles] along the shore, or one side of a navigable river, or two leagues on each side of a river, and so far into the country as the situation of the occupiers shall permit. . . ." These grants, unlimited in extent, could be taken up anywhere in the colony except on the island of Manhattan, which the Dutch West India Company reserved for itself. The patroons had the right of perpetual inheritance and disposal by will. The colonists were to be freed from taxation for 10 years. The patroons were

⁶¹ Eggleston, *Social Conditions in the Colonies*. *Century Magazine*, XXVIII (1884), p. 852.

⁶² Osgood, *American Colonies in the Eighteenth Century*, II, 39.

⁶³ Reprinted in English in Jameson's *Narratives*, 90-96; and in less correct translation in O'Callaghan's *N. Y. Documents Relative to Colonial History*, II, 553-557.

more than landlords; they were political officers with many of the powers of the lords of feudal manors, such as court jurisdiction, milling rights, etc. Their colonists were bound to stay on the estate for a term of years.

Under such provisions some very large properties and a few smaller patroonships were established; Rensselaerswyck and Pavonia on the Hudson River, and Svaanendael on the Delaware. Of these only the first, a tract of upwards of 700,000 acres, became at all permanent. The others were either abandoned or their rights were purchased by the company.⁶⁴ But meanwhile small freeholds had been increasing rapidly and, notwithstanding the prominence of a few manors, were the dominant form of land tenure in New Netherland, for the Dutch West India Company had not overlooked the interests of small settlers. The Privileges and Exemptions of 1629⁶⁵ contained the following provision:

"In regard to such private persons as on their own account, or others in the service of their masters here in less numbers than in case of patroons, shall be inclined to go thither and settle, they shall, with the approbation of the Director and Council there, be at liberty to take up and take possession of as much land as they shall be able properly to improve, and shall enjoy the same in full property either for themselves or masters."

In 1640 a more liberal charter⁶⁶ granted to anyone who should emigrate to New Netherland with 5 souls, 100 morgens (about 200 acres) of land. Under such regulations small grants were taken up in large numbers on the western end of Long Island, on Staten Island, and on the west bank of the Hudson. Although made originally by individuals, the Dutch settlements were soon organized into village communities which resembled in many respects those of New England.⁶⁷

LAND TENURE UNDER THE ENGLISH GOVERNORS.

The English governors did not introduce any radical departures in the Dutch land system. They confirmed all Dutch titles, both those of the small colonists and of the patroons, substituting, of course, the tenure of the Duke of York (later James II) for that of the Dutch West India Company. Their policy in new grants aimed to secure rapid settlement and cultivation, "that thereby the respective plantations might be the better peopled, strengthened, and improved, and his Majesty's revenue accordingly advanced. . . ." ⁶⁸ Governor Nicolls⁶⁹ reported (ca. 1669) that "the severall proportions of dividents of Land are alwaies allowed with respect to the numbers of Planters, what they are able to manage, and in what time to accomplish their undertaking,"

For the first 20 years of the English occupation the grants of land were, for the most part, under 1,000 acres and seldom exceeded 2,000 acres.⁷⁰ The wide discretion given to the English governors led to abuses in the granting

⁶⁴ Osgood, *American Colonies*, II, 31.

⁶⁵ Jameson's *Narratives*, 94.

⁶⁶ Reprinted in English translation in *N. Y. Documents Relative to Colonial History*, I, 118 et seq.

⁶⁷ See Eltinge, *Dutch Village Communities on the Hudson River*, in *J. H. U. Studies in History and Political Science*, IV, No. 1 (1886), pp. 1-68.

⁶⁸ *N. Y. Documents Relative to Colonial History*, IV, 392.

⁶⁹ In O'Callaghan, *Documentary History of New York*, I, 87.

⁷⁰ *N. Y., Documents Relative to Colonial History*, IV, 392.

of land in the later seventeenth century. Governor Dongan's commission⁷¹ (1686) empowered him to grant lands to any planters or inhabitants "for such term and under such moderate Quit-rents, services and acknowledgements as he should think fit. Similar powers were granted to later governors until reports began to come back to England of extravagant grants to favored individuals. The Earl of Bellomont reported⁷² (1698) that his predecessor, Colonel Fletcher, "hath made it almost impossible to settle the Country with Inhabitants, there being no land but what must be purchased from his few Grantees." Instances were cited of 6 enormous grants varying from 50 to 840 square miles each. In another letter⁷³ he estimated that "this whole Province is given away to about thirty persons in effect,"

The effect of such a policy was to give a new impetus to the system of large estates which the Dutch had attempted to establish, but in spite of the organization of a few manors such as those at Fordham and Pelham, the typical land tenure remained that of the small freeholder cultivating his own land. Where cheap land was so abundant and farming could be carried on with so little capital it would indeed have been an unenterprising dolt who would have preferred the life of a tenant to that of a freeholder. The Earl of Bellomont remarked⁷⁴ that "men will not care to become base tenants to proprietors of land in this province [i. e., New York], when they can buy the fee-simple of lands in the Jerseys for five pounds per hundred acres, and I beleive [sic] as cheaply in Pensylvania."

QUITRENTS IN NEW YORK.

In New York the requirement of quitrents as a condition of land grants had been enjoined upon the governors, and in 1687 a minimum annual payment was specified of 2s. 6d. for each 100 acres of land granted, but this rule was disregarded. Governor Dongan reported (1687) that the quitrents were very inconsiderable, "the most part of the patents granted by my predecessors were without any reservation of Quit-Rents. . . ."⁷⁵ Occasionally we find instances of quitrents paid in kind. The planters on Staten Island paid 1 bushel of wheat for each 80 acres, and on the large grants in the Mohawk Valley quitrents were paid in otter or beaver skins.⁷⁶

THE METHODS OF SETTLEMENT IN THE MIDDLE COLONIES.

The typical form of settlement in New England was by communities, and by the migration of New Englanders to Long Island, to Westchester County, New York, and to northern New Jersey their typical institutions were introduced into the colonies under proprietary government. Denton⁷⁷ observed the New England system in operation in New York (1670). He wrote:

"To give some satisfaction to people that shall be desirous to transport themselves thither, (the Countrey being capable of entertaining many thousands,) how and after

⁷¹ *N. Y. Documents Relative to Colonial History*, III, 381.

⁷² *Ibid.*, IV, 334.

⁷³ *N. Y., Documents Relative to Colonial History*, IV, 397.

⁷⁴ *Loc. cit.*

⁷⁵ O'Callaghan, *Documentary History of New York*, I, 164.

⁷⁶ *N. Y. Documents Relative to Colonial History*, III, 303; IV, 392.

⁷⁷ *Brief Description of New York*, 17.

what manner people live, and how Land may be procured, &c, I shall answer, that the usual way, is for a Company of people to joyn together, either enough to make a Town, or a lesser number; these go with the consent of the Governor, and view a Tract of Land, there being choice enough, and finding a place convenient for a Town, they return to the Governor, who upon their desire admits them into the Colony, and gives them a Grant or Patent for the said Land, for themselves and Associates. These persons being thus qualified, settle the place, and take in what inhabitants to themselves they shall see cause to admit of, till their Town be full; these Associates thus taken in have equal privileges with themselves, and they make a division of the Land suitable to every mans occasions, no man being debarr'd of such quantities as he hath occasion for, the rest they let lie in common till they have occasion for a new division, never dividing their *Pasture*-land at all, which lies in common to the whole Town."

But the proprietary system favored an individualistic system of settlement. Grants were made to individuals rather than to groups of settlers. In New England the village institutions which provided for the distribution of land and the location of farms within the town grant were framed in advance of settlement. In the Middle Colonies the process was reversed. Settlers received their grants as individuals, often after actual settling upon the land, and when a number of farms had been cleared in a neighborhood a local government was organized. Says Osgood: ⁷⁸

"The economic impulse under which the provinces were settled operated upon individuals and families more than upon groups and entire communities. Migration and the progress of settlement within the provinces were, in most cases, distinctly individualistic in character."

The evils of dispersion of population were so obvious that the proprietors undertook to encourage group settlements. Governor Nicolls of New York reported (ca. 1669): ⁷⁹

"The Governour gives liberty to Planters to find out and buy lands from the Indians where it pleaseth best the Planters but the seating of Towns together is necessary in these parts of America, especially upon the Maine Land."

In East New Jersey the proprietors seem to have originally contemplated group settlements. In the "Proposals" ⁸⁰ of 1682 we find the following provisions:

"And forasmuch as it will be most commodious for planters to live together, whereby they may be a meet help to each other: It is ordered, that all the purchasers and takers up of land, shall sit down by some village or township already laid out, or to be laid out hereafter, in the said province."

Penn understood thoroughly the social advantages of community settlements. In the Conditions and Concessions of 1681 ⁸¹ he made specific provisions for the colonists who wished to "sit together in a lot or township." Later he laid out a number of townships of 5,000 acres in squares, each having a village with a minimum of 10 families. The arrangement of the villages he describes as follows: ⁸²

"Our Townships lie square; generally the Village in the Center; the Houses either opposit, or else opposit to the middle, betwixt two houses over the way, for near neighborhood. We have another Method, that tho the Village be in the Center, yet after a

⁷⁸ *American Colonies*, II, 48.

⁷⁹ *New York Documents Relative to Colonial History*, III, 188.

⁸⁰ In Smith's *New Jersey*, 545.

⁸¹ Hazard, *Annals of Penn.*, 516.

⁸² *Further Account of Pennsylvania*, in Myers's *Narratives*, 263.

different manner: Five hundred Acres are allotted for the Village, which, among ten families, comes to fifty Acres each: This lies square, and on the outside of the square stand the Houses, with their fifty Acres running back, where ends meeting make the Center of the 500 Acres as they are to the whole. Before the Doors of the Houses lies the highway, and cross it, every man's 450 Acres of Land that makes up his Complement of 500, so that the Conveniency of Neighbourhood is made agreeable with that of the Land."

Many of the colonists objected and wanted to have all their land in a lump,⁸³ "tho by such Wilderness vacancies they had ruin'd the Country, I had in my view Society, Assistance, Busy Commerce, Instruction of Youth, Government of Peoples manners, Conveniency of Religious Assembling, Encouragement of Mechanicks, distinct. and beaten Roads, and it has answered in all those respects, I think, to an Universall Content."

Notwithstanding the encouragement and planning of Penn and other proprietors, settlement by communities never attained in the Middle Colonies the importance which it held in New England.

LAW OF INHERITANCE.

The law and custom of the transfer of land by inheritance was more favorable to the growth of large estates in some of the Middle Colonies than in New England. In New York the English custom of primogeniture was formally established in 1683, when the First Colonial Assembly resolved:⁸⁴

"That from hence forward Noe Lands Within this province shall be Esteemed or accounted a Chattle or personall Estate but an Estate of Inheritance according to the Custome and practice of his Majesties Realme of England."

In New Jersey equal distribution among children of intestates was the rule,⁸⁵ and also in Pennsylvania until 1705, when a provincial law provided that the eldest son should have a double share of the estate of an intestate.⁸⁶

SUMMARY.

The land system of the Middle Colonies had a legal and institutional basis different from that of New England. The former was based on the town grant, the latter on the proprietary grant. In New England land was settled by communities, in the Middle Colonies by individuals. The payment of quitrents was a uniform condition of all grants in the Middle Colonies, but such payments were practically unknown in New England. The law and custom of inheritance was more favorable to the growth of large estates in the Middle Colonies, particularly in New York. Nevertheless, the main features of land tenure were the same. Land was cultivated by the owners in small parcels in Pennsylvania as in Massachusetts, in New York as in Connecticut. The differences in the laws of land tenure and the regulations for land distribution were not essential. Behind them, in both New England and the Middle Colonies, was a common and fundamental economic condition, the abundance of cheap land. Cheap land made large estates and tenancy as impossible in one section as in the other.

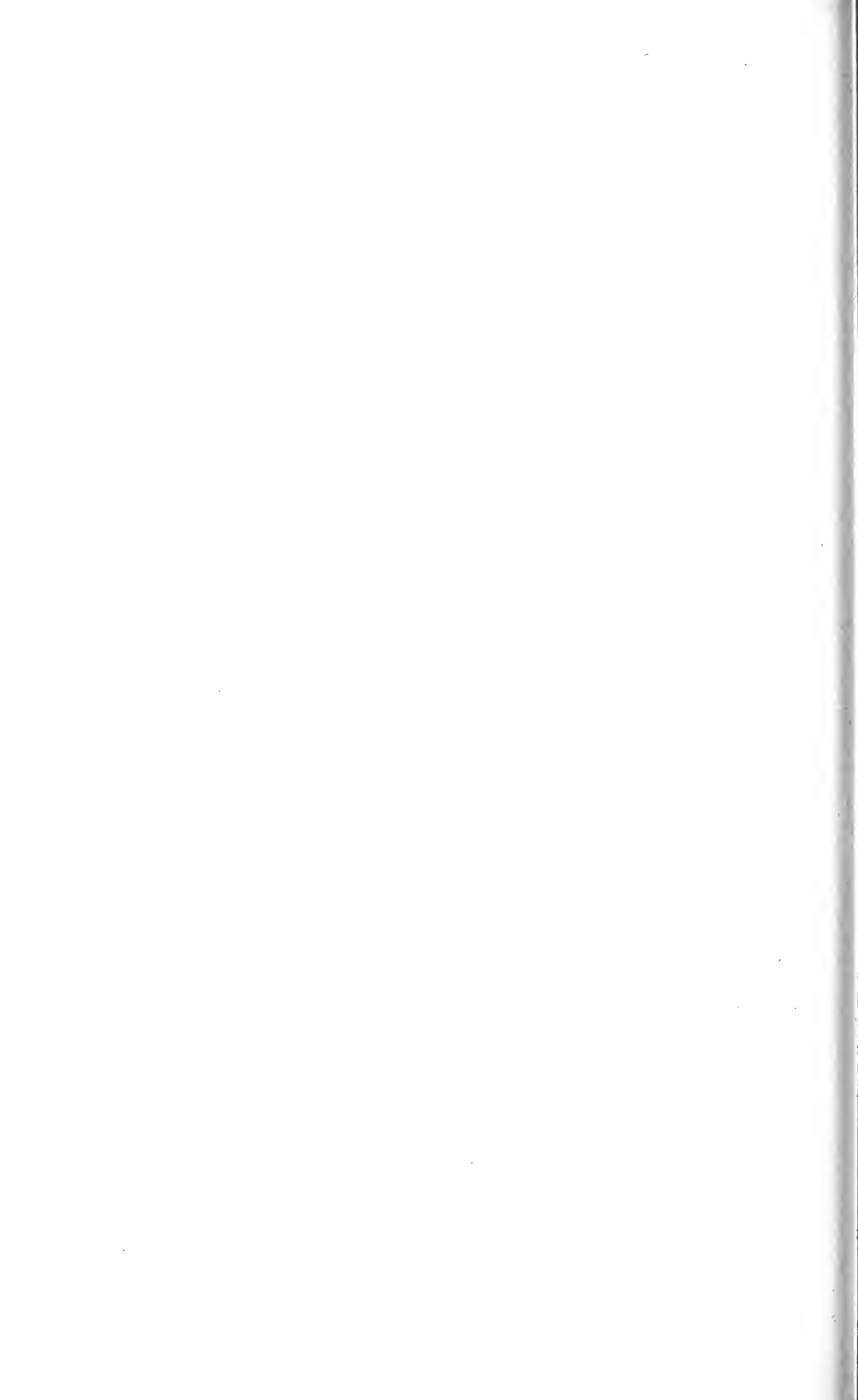
⁸³ Myers's *Narratives*, 263.

⁸⁴ *New York Colonial Laws*, I, 114.

⁸⁵ Leaming and Spicer, *Concessions and Agreements*, 403, 430.

⁸⁶ *Laws of the Province of Penn.* (1728), 49.

PART II
RURAL ECONOMY IN THE EIGHTEENTH
CENTURY



CHAPTER VI.—PIONEERING IN THE EIGHTEENTH CENTURY.

In studying the agricultural development of New England and the Middle Colonies in the eighteenth century, we can distinguish two sharply contrasted types of farming and of rural life: (*a*) pioneering, the agriculture of the new settlements on the frontier, and (*b*) the agriculture of the older communities along the seacoast and in the river valleys.

Until recent years pioneering has been an important feature of our agricultural history at all stages of its development. The frontier with its apparently inexhaustible supply of new, cheap land and its democratic and unrestrained social life has always been present to the westward of the older settlements, drawing away from them their surplus population, the most energetic as well as the most unruly of the younger generation. If the frontier has been a safety-valve for the relief of political discontent, it has also proved, changing the metaphor, a sponge absorbing much of the best talent from the farms of the East.

THE WESTWARD PROGRESS OF SETTLEMENT.

The first American frontier, as Professor Turner¹ has shown, was on the Atlantic coast. Until the end of the seventeenth century the colonists had occupied only a narrow fringe of the Coastal Plain from the Penobscot River to New York City and in addition the lower valleys of the Connecticut, Hudson, and Delaware Rivers.² In the hundred years ending in 1763 the colonists, amid almost incessant Indian warfare, had succeeded in clearing and settling a strip of Coastal Plain about 100 miles wide. This area, intermediate between the coast settlements of the seventeenth century and the trans-Allegheny settlements of the late eighteenth century, Professor Turner had aptly termed "The Old West." In New England the frontier was found in the first half of the eighteenth century in the western counties of Massachusetts and Connecticut. In New York the population expanded along the Hudson and Mohawk Valleys into the valleys of their tributaries, the Wallkill and Cherry Valleys, and also along the sources of the Susquehanna. In Pennsylvania the trend of settlement was into the Great Valley, the fertile limestone region of the southeastern part of the State and then southward along this valley into the southern uplands.

After the Treaty of Paris (1763) had removed the French and Indian menace, a great swarming of pioneers into new land took place. From the old towns of Southern New England thousands of settlers moved into New Hampshire, Maine, and Vermont. After the Revolution, immigration con-

¹ *The Old West*, in Wisconsin Hist. Soc. *Proceedings*, 1908, pp. 184-233.

² Maps showing settlement in 1660 are to be found in Channing, *United States*, I, 510, and in Shepherd, *Historical Atlas*, 189, 191.

tinued into northern New England, until by 1812 practically all its lands available for farming had been taken up. Into New York State, meanwhile, a stream of New England settlers had been flowing via the Mohawk Valley to take up lands in the fertile Genessee Country. From the older settlements of Pennsylvania emigrants passed across the Alleghenies and into the fertile valleys of the Ohio. It is unnecessary to repeat here the story of the westward movement of our population. We are interested only in the kind of agriculture which was carried on by the pioneers of the eighteenth century, and inasmuch as the record of the expansion of agriculture into the Ohio and Mississippi Valleys belongs chiefly to the nineteenth century, we shall confine our discussion to conditions east of the Alleghenies.³

THE CAUSES OF EXPANSION ON NEW LAND.

The forces which caused the movement of the agricultural population westward to the Alleghenies were varied. The soil of the old settlements soon showed the effects of an exhausting cropping system without adequate fertilization. Jared Eliot⁴ wrote in 1747 from Killingworth, Connecticut, on Long Island Sound, that soil depletion was in his opinion the most important cause of the failure of the wheat crops; continuing:

"When our fore-fathers settled here, they entered a Land which probably never had been Ploughed since the Creation; the Land being new they depended upon the natural Fertility of the Ground, which served their purpose very well, and when they had worn out one piece they cleared another, without any concern to amend their Land, except a little helped by the Fold and Cart-dung, Our Lands being thus worn out, I suppose to be one Reason why so many are inclined to Remove to new Places that they may raise Wheat: As also that they may have more Room, thinking that we live too thick."

As early as 1750 the declining yield of grain crops showed that the land in the neighborhood of Philadelphia was being "worn out";⁵ and in the neighborhood of both New York and Boston it was evident before the end of the eighteenth century that fertility was decreasing.⁶

THE RISE OF LAND VALUES IN THE OLDER COMMUNITIES.

Land values in the eighteenth century reflected the increasing scarcity of good land in the older communities as contrasted with its abundance on the frontier. Price data of the eighteenth century are fragmentary⁷ and unsatisfactory because of the disordered state of the colonial currencies. In the case of land values comparisons are rendered especially difficult by the lack

³ For a full discussion of the movements of population in the eighteenth century see Turner, *The Old West*, in Wis. Hist. Soc. *Proceedings* (1908), pp. 184-233. Also Mathews, *The Expansion of New England*, chapters I to V.

⁴ *Field Husbandry*, 23, 24.

⁵ Watson, *Philadelphia* (1830 ed.), 717.

⁶ New York Society for Promotion of Useful Arts, *Transactions*, I (2d ed., 1801), 57; American Academy, *Memoirs*, I, 385.

⁷ Fragmentary data are to be found in the writings of the travelers of the period. See especially Cooper, *Information Respecting America* (1794), pp. 71, 94, 107, 108; Richard Smith, *Journal* (1769), pp. 21, 32. See also Brown, *Schoharie County*, New York, 15; American Museum, VII (1790), p. 296; Washington, *Letters on Agriculture* (Knight ed.), 35-37, 107. Brown, in Mass. Hist. Soc. *Collections*, 1st series, IX, 118, 124.

of standardized units. Comment on the rise in land values around Philadelphia in 1750 is found in the report of a German traveler, who wrote: ⁸

“The price of farms in Pennsylvania, especially round Philadelphia, is already quite high; from 30 to 50 florins are paid for an acre, only a day’s journey from the city, although the ground is still uncleared forest land. If a place is desired for a homestead, which is already in a habitable and cultivated condition, containing a dwelling-house, barns and good stables, together with meadows, orchards, tilled fields and sufficient woodland, twice as much is asked for it as for uncultivated land, the price being about one hundred florins per acre. Rich Englishmen have already bought up from the Indians all the remote land far and near, where all is as yet wild and wooded, in order to sell it again to the Europeans who are coming to the country. Our German people who emigrate there do not get land enough for nothing upon which to build a cottage. The price of land is increasing from year to year, especially because the English see that so many people, anxious to own farms or plantations, are coming to the country every year.”

The author of *American Husbandry* (1775) ⁹ commented on rising land values in New England.

“Trade, navigation, fisheries, increasing population, with other causes, have operated strongly to raise the value of all the estates under cultivation, whose situation is favourable, for in proportion as the wild country is taken up good lands and convenient situations rise in value; till we see they come, near the great towns, to as high a value as in the best parts of Great Britain, for near Boston there are lands worth twenty shillings an acre.”

The best summary of the situation is to be found in the report prepared by William Strickland ¹⁰ in 1794 for the English Board of Agriculture. After giving a number of figures for land values in various parts of New York State, he concludes:

“Hence the average price of land, in the old settled country below Schenectady (rejecting such as being mountainous is little capable of cultivation, and such as for mercantile purposes, or from being in the vicinity of large towns, is of increased value) appears to be £3. 7s. 10d. per acre, and of the new settled country, to the west of it; 9s. 3½d.”

Regarding New Jersey and Pennsylvania, he wrote: ¹¹

“The best land in Jersey and in that part of Pennsylvania which is east of the mountains, exclusive of the German tract, may be settled at about £4. per acre; they certainly average something more than the old part of New York, this tract not being mixed with any barren mountains, and being less rocky and broken.

“The back lands of Pennsylvania sell for considerably less than those of New York: from what information I could obtain, I could not state them at more than 3s. or 4s. per acre; a great quantity was upon sale for less; the tenure of them is less satisfactory than of those of New York, the titles less to be relied upon, and the whole having less credit, many egregious frauds have been committed upon purchasers, particularly those in Europe.”

LAND POLICY AND EMIGRATION—NEW ENGLAND.

The policy adopted in the eighteenth century by the northern colonies in the disposal of unoccupied lands favored the dispersion of population and the rapid settlement of new areas. In the older New England towns up to the

⁸ Mittelberger, *Journey to Pennsylvania*, 118.

⁹ I, 63.

¹⁰ *Observations*, 12.

¹¹ *Ibid.*, 16.

early seventeenth century it had been relatively easy for a newcomer to obtain free of cost all the land he could effectively use. During the eighteenth century, as the supplies of undivided land in the town commons became diminished, the proprietors adopted a less liberal policy in land distribution.¹² About 1725 there came a change in the policy of certain New England colonies in the making of town grants. The prudent policy of distributing new land purely for the sake of settlement was abandoned, and instead both Massachusetts and Connecticut sold whole townships to grantees who intended not to settle but to resell at a profit. There followed a period (1730–1740) of speculation in “wild lands,” which, although in the end it proved disastrous to those who had bought large tracts, did nevertheless stimulate pioneering.¹³ A similar period of land speculation was inaugurated about 1760, when Governor Wentworth of New Hampshire sold the grants of 130 towns in Vermont, chiefly to speculators.¹⁴ The settlers who took up these lands soon discovered that the title to the whole tract was disputed by the province of New York and violence and bloodshed resulted before the matter was adjusted.¹⁵

IN PENNSYLVANIA.

In Pennsylvania, under the proprietary government, it was relatively easy for pioneers to acquire vacant land. The price of land when purchased from the land office fluctuated between £5 and £15 per 100 acres (i. e., between 1s. and 3s. per acre), beside a small quitrent, and sales were for cash and not on credit. However, the great majority of settlers who took up land in the back country, especially in the period of great German immigration, 1718–1732, did not trouble to acquire a title, but simply squatted on unoccupied land. During the first half of the eighteenth century the management of the proprietary lands was in great confusion and the practice of squatting became general. By 1726 it was estimated that there were 100,000 squatters and of 670,000 acres occupied (1732–1740) over two-thirds were settled without grants.¹⁶

“Squatting, though discouraged by the proprietors, as it defrauded them of quitrents, soon became the most popular and regular method of acquiring land. Squatters’ rights forced their way from presumptive titles to an established position, first as personalty and finally as realty. They became the basis of land transfers through the customary alienation of improvements instead of the legal title. Toward the middle of the Eighteenth Century the proprietors were forced to recognize them in the so-called settlement rights as a legitimate mode of obtaining title to land. From this time they supplanted office rights as the general basis of the acquisition and transfer of land throughout the province.”

The lands thus occupied without title had eventually to be paid for with interest, but the squatters were given the right of preemption and thus there was virtually established a credit system of land purchase in Pennsylvania which undoubtedly contributed greatly to the rapid settlement of the back

¹² Judd, *Hadley*, 286.

¹³ Mathews, *Expansion of New England*, 81–84, 92, 101.

¹⁴ Turner, in *Wisconsin Hist. Soc. Proceedings* (1908), 193.

¹⁵ Beckley, *Vermont*, 66.

¹⁶ Ballagh in *American Hist. Asso. Report* (1897), 112.

country.¹⁷ Not until 1769 were the affairs of the land office brought into a semblance of order. The township plan after that date was more effectively carried out, the size of grants was restricted, and actual settlement and improvement were required.¹⁸

IN NEW YORK.

The land system of colonial New York was less favorable to the small settler than either that of New England or Pennsylvania, and largely on that account the movement into the back country was less vigorous in that province. We have already remarked the unusual number of large land grants by the English governors at the end of the seventeenth century. The practice continued until the Revolution. A tabulation of the "more important patents," 1700-1775, shows that out of a total of 211 grants, 128, or 61 per cent, were for tracts of between 1,000 and 10,000 acres, and 83 were over 10,000 acres. The largest patents granted (2) were for 100,000 acres each. The average grant was 10,400 acres.¹⁹

Tenant farming was in only a few cases successfully established on the so-called manors of New York, and so the large holdings remained for the most part uninhabited and uncultivated. Squatting was practiced on such tracts, and the squatters at times could vindicate their titles in court, because of conflicting grants and careless surveying, but in general the young farmers looking for new land preferred to emigrate to a colony where fee-simple grants were more readily obtained. In 1764 Lieutenant Governor Colden wrote to the Lords of Trade:²⁰

"Your Lordships have been informed of several extravagant Grants of Lands in this province; three of them contain, as the proprietors claim, above a million of acres each, several others above 200,000. All these were made without any previous Survey, as usual in other cases, and without mentioning any quantity of land intended to be granted. Tho' these grants contain a great part of the province, they are made on trifling acknowledgements. The far greater part of them still remain uncultivated, without any benefit to the community, and are likewise a discouragement to the settling & improving the lands in the neighbourhood of them, for from the uncertainty of their boundaries, the Patentees of these great Tracts are daily enlarging their pretensions, and by tedious & most expensive Law-suits, distress and ruin poor families who have taken out grants near them; of all which, I propose to send to your Lordships particular proofs before winter."

And a year later he wrote:²¹

"The uncertainty of the Grant, both as to the quantity of the Land and boundaries of the Tract granted, which in Law invalidates the grants of the Crown, turns greatly to the advantage of the owners of these great Tracts, by the artifices they make use of to enlarge their claims perpetually. Thereby they are in continual contention with the Farmers contiguous to them, who have purchased Bona Fide, and improved the Lands; and by the expence of Law Suits many of the most industrious Farmers are ruined. . . ."

"In 1774 only 1,000,000 acres of the 5,000,000 acres of the province were improved, and the settlements were all east of Utica on the Mohawk, and were mainly confined to the Hudson River, Manhattan, Staten and Long Islands."²²

¹⁷ Turner, *The Old West*, Wisconsin Hist. Soc. *Proceedings* (1908), p. 213.

¹⁸ Ballagh, *Am. Hist. Asso. Report*, 1897, p. 112.

¹⁹ French, *Gazetteer of New York*, 49-52.

²⁰ O'Callaghan, *N. Y. Documents Relative to Colonial History*, VII, 654.

²¹ *Ibid.*, VII, 795.

²² Ballagh, *loc. cit.*, p. 110.

LAND POLICY AFTER THE REVOLUTION.

After the Revolution the new States of Massachusetts, New York, and Pennsylvania all began a liberal distribution of the vacant lands which they had inherited from the previous colonial governments. In Pennsylvania, by the acts of 1780 and 1783, tracts in the northwestern part of the State, known as the Depreciation and Donation Lands, were set aside for the soldiers of the Revolutionary War and were later opened to settlement. Western lands were at that date not greatly in demand, and many of the soldiers sold out their rights to speculators at low prices.²³ A land office was opened in 1781 and lands were sold at prices varying with the location from £3 to £30 for 100 acres.²⁴ In 1792 a general act was passed for opening the unsettled lands in the Commonwealth for settlement and improvement. The price of land was reduced, the maximum now being £7 10s. per 100 acres for land north and west of the Ohio and Allegheny Rivers. A limit of 400 acres was set on all grants, preemption rights on that amount being granted to settlers already in possession. Actual settlement by purchasers was made a condition for retention of title.²⁵

LAND SPECULATION IN NEW YORK.

In New York, also, vacant lands, the so-called Bounty Lands in the western part of the State, were distributed to Revolutionary soldiers.²⁶ A tract of about 1,800,000 acres was laid out in square townships of 24,000 acres which were divided into 200-acre lots. Private soldiers received 600 acres and officers larger amounts in proportion to their rank. As in Pennsylvania, large amounts of the Bounty Lands got into the hands of speculators, the soldiers having sold out their rights at ridiculously low prices.²⁷ In 1786 an act was passed whose title significantly read "An Act for the speedy sale of the Unappropriated Lands within this state." Having provided for laying out townships of 64,000 acres, divided into lots of 640 acres each, the law fixed a minimum price of 1 shilling per acre and required one-fourth of the purchase price to be paid down and the balance within 60 days. Actual settlement within 7 years was a condition for a valid title.²⁸ In 1791 the act was amended so that, with certain exceptions, the State lands might be sold by the commissioners of the land office "in such parcels, on such terms, and in such manner as they shall judge most conducive to the interest of this State. . . ." ²⁹ Thus, of course, the 1 shilling minimum price was abolished. An orgy of prodigal disposition of the state domain followed, over 5,500,000 acres being sold in a single year, the State treasury receiving only £412,173, or on an average 1s. 6d. per acre for the land. The largest single tract sold contained 3,635,200 acres and brought only 8d. per acre.³⁰

²³ Agnew, *Northwest Pennsylvania*, 28; Feree, *Pennsylvania*, 194-198.

²⁴ Read, *Abridgement of the Laws of Pennsylvania* (1801), 208-219.

²⁵ *Ibid.*, 219-224.

²⁶ By the acts of 25 July, 1782 and 11 May, 1784. See *Laws of New York* (Cook edition), 5th Session, 1782, chap. 77, p. 521; 6th Session, 1784, chap. 63, p. 731.

²⁷ Maude, *Visit to Niagara*, 38.

²⁸ *Laws of New York*, 9th Session (1786), chap. 67, p. 334.

²⁹ *Ibid.*, 14th Session, chap. 42, p. 245.

³⁰ O'Callaghan, *Documentary History of New York*, III, 1069-1083.

THE WILD LANDS OF MAINE.

Massachusetts, too, attempted to replenish her empty treasury after the Revolution by land sales. The District of Maine, then a part of the State of Massachusetts, was still largely unoccupied and contained millions of acres of "wild lands." The land system in Maine, as we have seen, had differed from that of Southern New England in the greater frequency of large grants directly to individuals. Titles had become uncertain owing to the overlapping of grants, and settlement had been hindered. For this reason, and also on account of the severe losses which the exposed Maine Coast suffered during the French and Indian wars, settlement was hindered, and not until after 1763 was progress made into the back country.³¹

Beginning in 1785, however, a land office was established and a campaign of land selling was inaugurated. In the years 1785-1792 something over 600,000 acres were disposed of at an average price of 41.4 cents per acre. In 1793 a sudden fever of land speculation raised the sales for that year to over 2,000,000 acres, but the average price fell to 12½ cents per acre. Hoping to check the speculative mania, the legislature in 1795 suspended all sales. But speculation nevertheless continued, for the large tracts of land which had been liberally granted in aid of educational institutions and for internal improvements were now placed on the market in an effort to convert them into cash.³²

Massachusetts had acquired in 1786 a 6,000,000-acre tract in Western New York in settlement of her claims in that region, and between 1787 and 1793 this entire tract was placed on the market and sold, mostly to companies organized for the purpose of resale at a profit. About 2,500,000 acres were taken in a single tract by Messrs. Gorham and Phelps and another large tract was sold to the Holland Land Company.³³

LAND POLICY SUMMARIZED.

In summary, it is clear that the land policy of all the colonies from 1700 to 1775, with the exception of New York, favored rapid settlement of the back country. After 1780, liberality was changed into reckless prodigality, and under the stimulus of financial necessity great tracts were thrown on the market. Much of the land was sold directly to middlemen, and other tracts came into their hands indirectly by sale from the original grantees. The temporary results were undoubtedly a great stimulus to emigration to the frontier. The land companies exerted themselves to find settlers to whom they could resell their holdings. Every settler on a new tract enhanced the value of the unsold land. To stimulate sales, the land companies extended long credits, whereas purchases directly from the States were usually for cash or on from 2 to 12 months' credit. In the long run, however, there appeared glaring evils. In the haste to dispose of lands, surveys were carelessly made and disputed boundary-lines led to uncertain titles. A particularly bad situation of this sort arose in Maine, where the settlers on the

³¹ Sullivan, *Maine*, 43, 44; Lincoln, in *Mass. Hist. Soc. Collections*, 1st Series, IV, 149.

³² Greenleaf, *Survey of Maine*, 399-401, 428. Felt, in *Am. Statistical Asso. Collections*, I, 75-78.

³³ Turner, *Holland Purchase*, 325, 326, 401.

so-called Kennebec Purchase, fearing to lose their lands and improvements, were kept in a state of unrest for almost a generation, and were finally stirred to armed insurrection before the conflicting claims were quieted.³⁴ Absentee ownership, also, was introduced and complaints became frequent that the progress of new communities was hindered by the indifference of absent landowners to local improvements and by the existence of large tracts held out of cultivation. Finally, the system of long-time credit led to inevitable disputes between the settlers and the land companies. The pioneer's life was arduous, as we shall see, and the task of clearing absorbed so much of his energies for the first few years that he had little opportunity to raise surplus crops. When he finally had a surplus, high transportation costs often shut him off from a market. The result was that a large proportion were unable to pay their annual installments as they fell due. The threat of ejection led to violent antipathy to the land company, and in some cases to violent action on the part of the settlers for the redress of their "grievances."

OTHER CAUSES OF EMIGRATION TO THE FRONTIER.

Combined with the economic motive, the demand for new soil, were undoubtedly others more psychological in nature. Some men were unable to fit into the rigid, Puritanical social and ecclesiastical systems. They emigrated in order to breathe the freer, more unconventional atmosphere of the pioneer communities. Others were simply infected by the contagious spirit; their friends had gone or were going; they too wanted to see the new country and to live its new life. Dwight takes account of these and other motives in the following passage from his *Travels*:³⁵

"In the formation of Colonies, those, who are first inclined to emigrate, are usually such, as have met with difficulties at home. These are commonly joined by persons, who, having large families and small farms, are induced, for the sake of settling their children comfortably, to seek for new and cheaper lands. To both are always added the discontented, the enterprising, the ambitious, and the covetous. Many of the first, and some of all these classes, are found in every new American country, within ten years after its settlement has commenced. From this period, kindred, friendship, and former neighbourhood, prompt others to follow them. Others, still, are allured by the prospect of gain, presented in every new country to the sagacious, from the purchase and sale of new lands: while not a small number are influenced by the brilliant stories, which everywhere are told concerning most tracts during the early progress of their settlement."

GENERAL DESCRIPTION OF PIONEER FARMING.

A general view of the life and work of the pioneer farmers may be gained from the description by a French traveler³⁶ of what he saw in western Connecticut in 1780:

"I saw, for the first time, what I have since observed a hundred times; for in fact, whatever mountains I have climbed, whatever forests I have traversed, whatever bye-

³⁴ Gardiner, in *Maine Hist. Soc. Collections*, 1st series, II, 288-292; Felt, in *Am. Statistical Asso. Collections*, I, 78.

³⁵ *Travels*, II, 458 (edition of 1821). In the succeeding pages, 458-460, one may read a description of the successive stages in the settlement of new land, from pioneering to ultimate cultivation in well-settled communities, which has attained the rank of a classic in economic history.

³⁶ Chastellux, *Travels*, 34.

paths I have followed, I have never travelled three miles without meeting with a new settlement, either beginning to take form or already in cultivation. The following is the manner of proceeding in these improvements or new settlements. Any man who is able to procure a capital of five or six hundred livres of our money, or about twenty-five pounds sterling, and who has a strength and inclination to work, may go into the woods and purchase a portion of one hundred and fifty to two hundred acres of land, which seldom costs him more than a dollar or four shillings and sixpence an acre, a small part of which only he pays in ready money. There he conducts a cow, some pigs, or a full sow, and two indifferent horses which do not cost him more than four guineas each. To these precautions he adds that of having a provision of flour and cider. Provided with this first capital, he begins by felling all the smaller trees, and some strong branches of the large ones: these he makes use of as fences to the first field he wishes to clear; he next boldly attacks those immense oaks, or pines, which one would take for the ancient lords of the territory he is usurping; he strips them of their bark, or lays them open all round with his axe. These trees mortally wounded, are the next spring robbed of their honours; their leaves no longer spring, their branches fall, and their trunk becomes a hideous skeleton. This trunk still seems to brave the efforts of the new colonist; but where there are the smallest chinks or crevices, it is surrounded by fire, and the flames consume what the iron was unable to destroy. But it is enough for the small trees to be felled, and the great ones to lose their sap. This object completed, the ground is cleared; the air and the sun begin to operate upon that earth which is wholly formed of rotten vegetables, and teems with the latent principles of production. The grass grows rapidly; there is pasturage for the cattle the very first year; after which they are left to increase, or fresh ones are brought, and they are employed in tilling a piece of ground which yields the enormous increase of twenty or thirty fold. The next year the same course is repeated; when, at the end of two years, the planter has wherewithal to subsist, and even to send some articles to market: at the end of four or five years, he completes the payment of his land, and finds himself a comfortable planter. Then his dwelling, which at first was no better than a large hut formed by a square of the trunks of trees, placed one upon another, with the intervals filled by mud, changes into a handsome wooden house, where he contrives more convenient, and certainly much cleaner apartments than those in the greatest part of our small towns. This is the work of three weeks or a month. His first habitation, that of eight and forty hours. I shall be asked, perhaps, how one man or one family can be so quickly lodged; I answer, that in America a man is never alone, never an isolated being. The neighbours, for they are every where to be found, make it a point of hospitality to aid the new farmer. A cask of cider drank in common, and with gaiety, or a gallon of rum, are the only recompense for these services. Such are the means by which North-America, which one hundred years ago was nothing but a vast forest, is peopled with three millions of inhabitants; and such is the immense, and certain benefit of agriculture, that notwithstanding the war, it not only maintains itself where ever it has been established, but it extends to places which seem the least favourable to its introduction. Four years ago, one might have travelled ten miles in the woods I traversed, without seeing a single habitation."

METHODS OF CLEARING.

In clearing the ground the first step was to cut down, grub out, and burn the underbrush. Then the larger timber might be destroyed either by girdling or by cutting it down and burning it. It is hard to distinguish the two systems: both were used in the same localities and were sometimes combined on the same tract. Cutting down the timber was probably the prevailing method in northern New England, in fact it was sometimes called the "Yankee system,"³⁷ but girdling was also practiced in New England.³⁸ In the region originally settled by the Swedes, on both sides of the Delaware

³⁷ Lorain, in Philadelphia Agric. Soc. *Memoirs*, III (1814), p. 112.

³⁸ See Dwight's description, *Travels* (1821 ed.), II, 125.

River, girdling was the favored method.³⁹ In Pennsylvania, the thorough-going German settlers in the southeast practiced the Yankee system. Dr. Rush⁴⁰ wrote:

“In clearing new land they do not girdle the trees simply, and leave them to perish in the ground, as is the custom of their English or Irish neighbors; but they generally cut them down and burn them. In destroying under-wood and bushes, they generally grub them out of the ground; by which means a field is as fit for cultivation the second year after it is cleared, as it is in twenty years afterwards.”

Elsewhere in Pennsylvania and in New York both methods of clearing were practiced.⁴¹

Girdling was more economical of labor at the beginning, but eventually the dead trees fell and must be removed, and in falling they endangered the lives of farmers and their stock. The type of pioneer who expected to remain only a few years on the tract he had cleared, and then sell out and move farther into the wilderness, usually practiced cutting and burning instead of girdling. The ashes from his great piles of logs gave him, when converted into potash, a cash crop in the first season, whereas his neighbor who girdled his trees might have to wait several seasons before he had a salable surplus. The fact that the humus in the soil was often destroyed by his huge fires did not worry the “exploiting” pioneer who did not intend to settle permanently and cultivate the land.⁴²

PIONEER CROPS AND TILLAGE.

On the land thus cleared the pioneer raised chiefly grain crops. Indian corn was usually the first crop on new land, although under some circumstances wheat or rye was planted. Thus in northern Vermont and in the Mohawk Valley wheat was more usually sown on new land, probably because of favorable marketing conditions.⁴³ Rye was a favored crop on new land in New Hampshire. Belknap wrote:⁴⁴

“Of all grains, winter rye thrives best on new lands, and Indian corn, or barley, on the old. Barley does not succeed well in the new land; nor is flax raised with any advantage, until the land has been cultivated for some years. The same may be said of oats and peas; but all kinds of esculent roots, are much larger and sweeter in the virgin soil, than in any other.”

It was observed in the more northern districts and in the higher altitudes that Indian corn did not yield as well on the new lands as on the old, and it was claimed that the ground must first be prepared for corn by some other crop. Belknap⁴⁵ explained the matter by reference to the date of planting. In the regions where the growing-season was short, the clearing process

³⁹ Acrelius, in *Pennsylvania Hist. Soc. Memoirs*, XI, 147.

⁴⁰ *Account of the German Inhabitants of Pennsylvania* (1789). Reprinted in *Pennsylvania German Society Proceedings and Addresses*, XIX (1910), 58.

⁴¹ Cooper, *Information Respecting America*, 116-119; Lorain, *Philadelphia Agric. Soc. Memoirs*, III (1814), p. 112.

⁴² On the whole subject of clearing, see Belknap, *New Hampshire*, III, 131-137.

⁴³ Richard Smith, *Journal*, 19; Miller and Wells, *Ryegate (Vermont)*, 193; *Orleans County (Vermont) Hist. Soc. Proceedings* (1889-91), p. 39; Watson, *Essex County (New York)*, 479.

⁴⁴ *History of New Hampshire*, III (1792), 136. See also Runnels, *Sanbornton (New Hampshire)*, I, 59.

⁴⁵ *New Hampshire*, III (1792), 136.

postponed the date of planting so long that corn did not come to full maturity. Potatoes were an eighteenth century innovation among pioneer crops. Like maize, they were planted with the hoe, usually without plowing. The seeds of wheat, rye, and other grains were raked in by hand or scratched in with a harrow.⁴⁶

LIVESTOCK, HAY, AND PASTURAGE.

A grass crop often followed two years of grains, the seed having been sown, perhaps, with rye or wheat, but the few animals which the pioneer took out with him to his new home gathered most of their nourishment from the woods and natural meadows. The supply of hay in new settlements was often insufficient for winter fodder and cows went farrow and in some cases literally starved to death.⁴⁷ The importance of livestock in pioneer agriculture increased in regions where cattle could be successfully fattened for market. In some regions of New Hampshire and Maine cattle were driven into the new tract to be pastured there in advance of settlement. Where there was but little underbrush the cattle browsed in the woodlands, and meanwhile the settlers brought their cleared lands into mowing as soon as possible. In New Hampshire many farmers in the old towns fatted cattle for market on land in new settlements which they had cleared and brought into grass.⁴⁸

THE IMPORTANCE OF BY-INDUSTRIES.—POTASH AND MAPLE SUGAR.

The pioneer farmer was often engaged in accessory occupations which, although furnishing him an important source of income, often interfered with farming operations and hindered the development of good agricultural practice. Fishing and hunting often took up a large share of his time, and where there were suitable water courses for floating logs to the saw mills, lumbering was a favorite occupation. In districts where much lumbering was carried on, farming was generally in a bad state. Belknap⁴⁹ wrote:

“The best season for sawing logs is the spring, when the rivers are high; this is also the time for ploughing and planting. He who works in the saw-mill at that time, must buy his bread and clothing, and the hay for his cattle, with his lumber; and he generally anticipates the profit of his labor. Long credit is a disadvantage to him; and the too free indulgence of spirituous liquor, to which this class of people are much addicted, hurts their health, their morals and their interest. They are always in debt, and frequently at law. Their families are ill provided with necessaries, and their children are without education or morals.”

⁴⁶ Lorain, in *Philadelphia Agric. Soc. Memoirs*, III (1814), p. 112; Cooper, *Information Respecting America*, 113, 116-119; *Notes on Lancaster* (New Hampshire), in *Massachusetts Hist. Soc. Collections*, 2d series, III, 98, note 2; Richard Smith, *Journal*, 21.

⁴⁷ Runnels, *Sanbornton* (New Hampshire), I, 60; Smith, *Rev. Thomas, Journal*, 266, 267, 269.

⁴⁸ Belknap, *New Hampshire*, III, 135; Lincoln, in *Mass. Hist. Soc. Collections*, 1st series, IV, 145; Coffin, in *Maine Hist. Soc. Collections*, 1st series, IV, 288.

⁴⁹ *New Hampshire*, III, 261; see also *Mass. Hist. Soc. Collections*, 1st series, IV, 90, 149; Kendall, *Travels*, III, 72-84; Watson, *Essex County* (New York), 478.

Where saw-logs could not be gotten to mills the making of potash for sale was often an important by-industry. A "potash house," to which ashes were brought by the farmers and converted into potash and pearl ash, was usually found in new settlements in New England and New York, and less frequently in Pennsylvania.⁵⁰ The method of manufacturing potash as then practiced was described by La Rochefoucauld⁵¹ as follows:

"Large tubs, with a double bottom, are filled with ashes; the uppermost bottom, which contains several holes, is covered with ashes, about ten or eleven inches deep, while the under part of the tub is filled with straw or hay. Water, being poured over the ashes, extracts the particles of salt, and discharges all the heterogeneous matter which it may yet contain on the layer of hay or straw. The lie is drawn off by means of a cock, and if it should not yet have attained a sufficient degree of strength, poured again over the ashes. The lie is deemed sufficiently strong when an egg swims on it. This lie is afterward boiled in large iron cauldrons, which are constantly filled out of other cauldrons, in which lie is likewise boiling This salt is of a black colour, and called *black potash*. Some manufacturers leave the potash in this state in the cauldron, and encrease the fire, by means of which the oil is disengaged from the salt in a thick smoke, and the black potash assumes a grey colour, in which state it is packed up in barrels for sale.

"Pearlash is potash purified by calcination. To this end the potash is put into a kiln, constructed in an oval form, of plaster of Paris; the inside of which being made otherwise perfectly close, is horizontally intersected by an iron grate, on which the potash is placed. Under this grate a fire is made, and the heat, reverberated by the arched upper part of the kiln, compleats the calcination, and converts the potash into pearlash; The process of calcination lasts about an hour."

The apparatus necessary for this manufacture was inexpensive, the largest outlay being for the purchase of the kettles in which the lye was boiled. The products, pearlash and potash, were used to some extent in the household in making soap, in scouring wool, and in bleaching and dyeing cloth. The larger part of the output was sold, partly for use in glass-making and other manufactures, and partly for export.

Maple sugar was another important by-product of pioneer agriculture. Williams⁵² wrote:

"The manufacture of maple sugar is also an article of great importance to the state [Vermont]. Perhaps two thirds of the families are engaged in this business in the spring, and they make more sugar than is used among the people. Considerable quantities are carried to the shop keepers; which always find a ready sale, and good pay. The business is now carried on, under the greatest disadvantages: Without proper conveniencies, instruments, or works; solely by the exertions of private families, in the woods, and without any other conveniencies than one or two iron kettles, the largest of which will not hold more than four or five pailfulls. Under all these disadvantages, it is common for a family to make two or three hundred pounds of maple sugar in three or four weeks."

The production of maple sugar was found in the back settlements of New England and New York, and in Pennsylvania as well, though perhaps less generally.⁵³

⁵⁰ Williams, *Vermont*, II, 361; Graham, *Descriptive Sketch of Vermont*, 40; Cooper, *Information Respecting America*, 143; Campbell, *Travels*, 268, 285.

⁵¹ *Travels*, 1799 Edition, I, 385.

⁵² *Vermont*, II, 363. For descriptions of the process of making maple sugar see Dwight, *Travels* (1821 ed.), I, 40; Belknap, *New Hampshire*, III, 113.

⁵³ Richard Smith, *Journal* 26; Mittleberger, *Journey to Pennsylvania*, 71; Coxe, *View of the United States*, 65.

THE PROGRESS OF PIONEER COMMUNITIES.—HARDSHIPS OF PIONEERING.

The first years of a pioneer's life were full of exhausting toil and often marked by the most discouraging hardships. Clearing the woods was a slow process. The typical settler would clear, perhaps, on the average from 1 to 3 acres a year. Those who were exceptionally energetic or who had exceptionally large families would do considerably better. In Concord, New Hampshire, at the end of 5 years several of the settlers had as much as 12 acres cleared, fenced, and ploughed, or in mowing. One settler with 5 grown sons had broken up, cleared, and mowed more than 80 acres, besides erecting "very considerable buildings."⁵⁴ At the end of the first 10 years in another New England town every settler had at least 15 acres cleared and some had 50 acres.⁵⁵ If all went well at the end of 4 or 5 years the settler might expect to be fairly comfortably fixed, at least as regards food and shelter. In the meanwhile, however, he and his family might have been facing death from starvation and exposure. Until the first corn crop was harvested grain must be brought in from outside. Of the Sandy River settlement in Maine, Allen wrote:⁵⁶

"No corn could be had by the new settlers the first summer, nearer than Fort Western (Augusta), 40 miles; several of them had to go on foot to that place and carry a basket of corn on their backs, first to Winthrop to mill and then home to keep their families from starving; many expedients were resorted to, to allay the cravings of hunger; some lived for several days at a time on greens; some dug up their potatoes after they were planted, cut out and replanted the eyes and ate the rest. After three or four months, when green corn was fit to pick and potatoes large enough to dig, all were relieved essentially. The months of May, June and July, 1781, formed the most distressing period in the settlement of Sandy River. After the corn crop came off in the fall, almost every one had a tolerable supply; one settler raised a little wheat that summer; but then there was no mill within 40 miles, and no way to go to mill but on foot, till they could go by sledding in the winter. Several prepared large samp mortars,⁵⁷ with a spring pole by which a man could pound a bushel a day so as to make one half fit for bread; the other half made good hominy."

The situation described above is perhaps extreme, but it is abundantly evident that if the pioneers had depended on the products of their fields and on their domestic animals for food they would have had very little to eat. As it was, meat was rarely tasted, unless it were game, and the nuts and berries of the forest were welcome additions to brown bread, pea or bean porridge, and baked pumpkin.⁵⁸ As the settlement grew older less reliance was placed on the forest for food resources, except by the less thrifty and industrious, who could not settle down to the regular tasks of farming.

The house of the pioneer, the often-described log hut, was neither a comfortable nor a hygienic dwelling, Belknap⁵⁹ wrote:

"They erect a square building of poles, notched at the ends to keep them fast together. The crevices are plastered with clay or the stiffest earth which can be had, mixed with

⁵⁴ Bouton, *Concord, New Hampshire*, 128-131.

⁵⁵ Miller and Wells, *Ryegate, Vermont*, 96.

⁵⁶ In *Maine Hist. Soc. Collections*, IV, 39.

⁵⁷ The samp mortars used on Long Island are described in Furman, *Long Island Antiquities*, I, 227.

⁵⁸ Miller and Wells, *Ryegate, Vermont*, 94, 190; Leonard, *Dublin, New Hampshire*, 280, 283; Dwight, *Travels* (ed. 1821), II, 313.

⁵⁹ *New Hampshire*, III (1792), 258; see also Leonard, *Dublin, New Hampshire*, 279, 281.

moss or straw. The roof is either bark or split boards. The chimney a pile of stones; within which a fire is made on the ground, and a hole is left in the roof for the smoke to pass out. Another hole is made in the side of the house for a window, which is occasionally closed with a wooden shutter. . . . Ovens are built at a small distance from the houses, of the best stones which can be found, cemented and plaistered with clay or stiff earth."

In such "dark, dirty and dismal" habitations the pioneer family lived for at least the first 10 or 15 years, and often much longer. In Chester, New Hampshire, the first frame house was erected in 1732, 13 years after the first settlement;⁶⁰ in Hallowell, Maine, most of the inhabitants were still living in log huts in 1784,⁶¹ about 25 years after the first settlement; and in Ryegate, Vermont, settled in 1775, log houses were still occupied in 1865.⁶²

SUMMARY.—PIONEERING A PROCESS OF CAPITAL- MAKING.

It would seem from the foregoing description that the economic struggle on the frontier must have been more severe than in the older-settled communities. The pioneer family undoubtedly worked harder, and for the first few years at least enjoyed less in the way of comforts and satisfactions in return for their efforts. Their houses were less comfortable, their food and clothing were more scanty, and in general their standard of living was lower. Judging by the pioneer's consumption of economic goods, we should conclude that his income was small and that on the whole there was little profit in pioneer farming.

But such a judgment would be mistaken. The pioneer did indeed take out only a meager income from his farm in the first 5 or 10 years, but the income taken out was often only a small part of the total income which accrued during that period. In his first years the pioneer was chiefly engaged in producing capital goods. There are occasional cases recorded of woodland farming with considerable initial capital, where hundreds of acres were cleared and brought into cultivation with the aid of indentured servants, negro slaves, and hired laborers.⁶³ But as a rule the pioneer exhausted his ready cash in the first payments on his land, and his entire stock of capital which he took to his new home consisted of an axe, a gun, a few tools, perhaps a plough, some flour, and a few head of livestock. With this meager equipment he undertook a double-task: (1) the maintenance of his family with the immediate necessities of life, or the production of consumption goods, and (2) the clearing of land, erection of buildings, and the building of roads, or, in other words, the creation of capital goods. It was because the greater part of his time and energy were devoted to the latter kind of production that his standard of living seemed low.

The pioneer farmer may be compared to a business corporation which pursues a conservative dividend policy. Instead of paying out all of current income to the stockholders, it puts a large share back into the business, thus

⁶⁰ Bell, in *New Hampshire Hist. Soc. Collections*, VII, 347.

⁶¹ North, *Augusta, Maine*, 189.

⁶² Miller and Wells, *Ryegate, Vermont*, 94.

⁶³ *American Husbandry*, I, 109-121, 191-196.

increasing the value of its capital. The pioneer was engaged in literally "ploughing in his profits." The income which he did not take out of his enterprise steadily accrued and was shown in the increased value of his land.

The following quotation describes, perhaps in too optimistic language, the economic position of the pioneer farmer:⁶⁴

"Amidst the hard living and hard labor, that attends the forming a new settlement, the settler has the most flattering prospects and encouragements. One hundred acres of land in a new town, does not generally cost him more than he can spare from the wages of one or two years. Besides maintaining himself, the profits of his labor will generally enable a young man, in that period of time, to procure himself such a tract of land. When he comes to apply his labor to his own land, the produce of it becomes extremely profitable. The first crop of wheat will fully pay him for all the expense he has been at, in clearing up, sowing, and fencing his land; and at the same time, increases the value of the land, eight or ten times the original cost. In this way, every day's labor spent in clearing up his land, receives high wages in the grain which it procures, and adds at the same time a quantity of improved land to the farm. An acre of land which in its natural state, cost him perhaps the half of one day's labor, is thus in one year made of that value, that it will afterwards annually produce him from fifteen to twenty five bushels of wheat; or other kinds of produce, of equal value. In this way, the profits attending labor on a new settlement, are the greatest that ever can take place in agriculture; the laborer constantly receiving double wages. He receives high wages in the produce of his corn or wheat; and he receives much higher wages of another kind, in the annual addition of a new tract of cultivated land to his farm. This double kind of wages, nature with great benevolence and design, has assigned to the man of industry, when he is first making a settlement in the uncultivated parts of America: And in two or three years, he acquires a very comfortable and independent subsistence for a family, derived from no other source but the earth, and his own industry."

⁶⁴ Williams, *History of Vermont*, II, 353.

CHAPTER VII.—FARMING IN THE OLDER SETTLEMENTS. CROPS AND TILLAGE.

The farming of the older settlements in the eighteenth century continued to be a mixed husbandry combining the cultivation of small areas of cereals with the raising of livestock. The broad lines of distinction between New England and the Middle Colonies which had been laid down in the seventeenth century were further emphasized by the eighteenth. The grazing industry was given more attention in New England, whereas in the Middle Colonies, and particularly in Pennsylvania and New Jersey, wheat-growing was of increasing importance. As far as its technical condition was concerned, agriculture was almost everywhere in a bad state. Farming appeared at its worst on the frontier, where the scarcity of labor and capital favored predatory methods, and at its best in the neighborhood of the commercial towns, where ready markets stimulated intensive use of the soil. The typical farming of the eighteenth century, the subject of discussion in this and following chapters, was to be found between these extremes. The majority of farmers were not pioneers of the frontier nor market gardeners. The typical agriculture of the period was conducted not on new but on old soil, on farms that had been worn out by generations of bad tillage, and it was conducted in regions away from tidewater, where markets were relatively inaccessible.

In general, judged by the best standards of their own time, the business of the inland farmers at the end of the eighteenth century was ineffectively and even carelessly managed. In only a few particulars had noticeable improvement been made over the primitive methods employed by the earliest settlers. As soon as the pioneer stage had passed in a particular locality the colonists had settled down in a routine husbandry similar to the practices of English farmers of the seventeenth century, but in some ways showing retrogression. In the century and a half intervening between the settlement of New England and the opening of the nineteenth century, improvements of far-reaching significance had been introduced in English agriculture, through the work of Tull, Bakewell, Townshend, Coke, and Arthur Young. The knowledge of these changes had spread quickly to this side of the Atlantic, and yet the bulk of the farmers had shown no disposition to adopt the new methods. On their poorly cultivated fields little fertilizer of any sort was used, their implements were rough and clumsy, livestock was neglected, and the same grains and vegetables were raised year after year with little attempt at a rotation of crops, until the land was exhausted.

CONTEMPORARY CRITICISM.

The apparent lack of intelligence and of a progressive spirit among northern farmers drew severe comment from both native and foreign observers.

General Warren of Massachusetts, writing in the *American Museum*¹ in 1786, drew a sharp contrast between the methods prevailing at home and in England. He says:

“A man in England that farms 150 acres, would think a stock of £500 sterling necessary; three teams would be employed; four or five ploughs; barrows, wagons, carts, &c. in proportion; 70 or 80 acres tilled; 8 or 10 labourers at work; 800 or 1000 loads of manure annually collected; and perhaps three times more cattle, sheep, and hogs kept, than are kept here on a farm that is naturally as good. A man in America that farms 150 acres, would think a stock of £100 sufficient. One miserable team; a paltry plough, and everything in the same proportion; three acres of Indian corn, which require all the manure he has; as many acres of half-starved English grain from a half-cultivated soil, with a spot of potatoes, and a small yard of turneps, complete the round of his tillage, and the whole is conducted, perhaps, by a man and a boy, and performed in half their time; no manure but the dung from the barn, which, if the heaps are not exposed to be washed away by the winter rains, may amount to 15 or 20 loads; and if they are so exposed to much less, without any regret to the farmer. All the rest of the farm is allotted for feeding a small stock. A large space must be mowed for a little hay for winter; and a large range for a little feed in summer. Pastures are never manured, and mowing lands seldom.”

Tench Coxe² observed a number of defects in the agriculture of the Middle Atlantic States, including

“innumerable instances of impoverished lands; precious bodies of meadow lands, in the old settlements of some of the states, which remain in a state of nature; a frequent inattention to the making or preserving of manure; as frequent inattention to the condition of the seed grain evidenced by the growth of inferiour grain in fields of wheat, and by the complexion of the flour in some quarters; the bad condition of *barns*, stables, and fences, and in some places the total want of the former; the deficiency of spring-houses or other cool dairies, in extensive tracts of country; the want of a trifling stock of bees; the frequent want of orchards, and the neglect of those which have been planted by preceding occupants; the neglect of the sugar-tree; the neglect of fallen timber and fuel, accompanied with the extravagant felling of timber trees for fuel; the neglect of household manufactures in many families; the neglect of making pot-ash; the non-use of oxen; . . .” [He concluded that] “*farming*, in the grain states, their great best business, the employment most precious in free governments, is too generally speaking, the least understood, or the least economically and attentively pursued, of any of the occupations which engage the citizens of the United States.”

Although usually a staunch supporter of all New England institutions, Dwight³ was forced to admit that

“the husbandry of New England is far inferior to that of Great Britain. . . . The principal defects in our husbandry, so far as I am able to judge, are a deficiency in the quantity of labour, necessary to prepare the ground for seed; insufficient manuring; the want of a good rotation of crops; and slovenliness in cleaning the ground. The soil is not sufficiently pulverized; nor sufficiently manured. We are generally ignorant of what crops will best succeed each other; and our fields are covered with a rank growth of weeds.”

CROP MANAGEMENT.

Let us take up the principal criticisms in more detail as far as they relate to field crops, reserving others for later chapters. First, as regards crop management. The general practice was to sow grain crops successively on the same land without manuring until it was exhausted and then to leave it

¹ II, No. IV (1787), p. 347.

² *View of the United States* (1794), 358.

³ *Travels*, I (1821 ed.), 108, 109.

fallow, i. e., to grow up to weeds and bushes for a number of years until it was thought to have rested sufficiently to produce more grain. Kalm⁴ noted (1748) that the land near Germantown, being tilled for several years successively without being manured, eventually declined in fertility.

“Its possessor therefore leaves it fallow, and proceeds to another part of his ground, which he treats in the same manner. Thus he goes on till he has changed a great part of his possessions into corn-fields, and by that means deprives the ground of its fertility. He then returns to the first field, which now is pretty well recovered; this he again tills as long as it will afford him a good crop, but when its fertility is exhausted, he leaves it fallow again, and proceeds to the rest as before.”

Fallowing of this sort was observed by the author of *American Husbandry* wherever he traveled in the northern colonies. Of the cropping system in New York he remarked:⁵

“The general system is to crop their fields with corn, till they are absolutely exhausted; then they leave them, what they call fallow, that is, to run to weeds for several years, till they think the soil has recovered somewhat of its fertility, when they begin again with corn, in succession, as long as it will bear any, leaving it afterwards to a fallow of weeds. If no spontaneous growth came, but such as cattle would freely eat, the evil would not be great, because then the land would not have more to support than it would gain by the dung, &c. of the stock supported. But the contrary is the case: an infinite quantity of rubbish comes which no beast will touch, this seeds the land in so constant of succession, that the soil is never without a large crop on it. The extent to which this practice is carried would astonish any person used to better husbandry: it is owing to the plenty of land; the farmers, instead of keeping all their grounds in good order, and a due succession of valuable crops, depend on new land for every thing, and are regardless of such management as would make their old fields equal the value of the new ones.”

There was no regularly observed succession of grain crops. Wheat, maize, rye, and the principal cereals were alternated on the larger fields, sharing the land occasionally with small patches of oats, barley, and flax. The beginning of a modern system of crop rotation had appeared as early as the Revolution. The period of fallowing, which had ranged from 7 to 15 years, was shortened to 1 or 2 years. In Massachusetts the land was usually broken up after being in grass 3 or 4 years, and then cropped for 3 years.⁶ In preparation for some crops, flax, hemp, and wheat, a summer fallow was not uncommon. A few experiments were made with the introduction of new crops in the rotation, potatoes and clover. On a large farm on the Hudson River in 1775 a 6-year rotation was reported as follows: (1) potatoes, (2) wheat, (3) potatoes, (4) wheat, (5) barley, (6) peas and clover. A most important change which began after the Revolution was the introduction of the practice of sowing the fields in the years when they were to be pastured with some kind of grass seed, often clover.

Schoepf⁷ described the cropping system near Philadelphia as follows:

“What with the quantity of land many farmers own, they cannot work the whole of it properly, and therefore many acres lie fallow 5-6-7 years together. The usual practice is to plant maize the first year; the second year wheat is sown along with English grass-seeds, and after the wheat is off, the field is pastured for four or five years. At other times they sow buckwheat ($\frac{1}{2}$ bus. to the acre) after wheat, or it may be turnips.”

⁴ *Travels*, I, 185.

⁵ I, 126; see also I, 53, 171.

⁶ *Massachusetts Agricultural Repository*, I, II (1807), p. 28.

⁷ *Travels* (1783-84), I, 130.

Cooper⁸ described a 5-year rotation in use in Lancaster County, Pennsylvania, in 1794 in which clover occupied 2 years.

The tillage of American fields was an especial object of the scorn of English observers.⁹ The author of *American Husbandry* wrote of New England:

“Worse ploughing is nowhere to be seen. . . . Thus, in most parts of the province, is found shallow and unlevel furrows, which rather scratch than turn the land; and of this bad tillage the farmers are very sparing rarely giving two ploughings if they think the crop will do with one; the consequence of which is their products being seldom near so great as they would be under a different management.”

Eliot had been convinced of the value of deeper ploughing and had attempted to popularize his discoveries, but for the mass of farmers furrows were probably not more than 4 or 6 inches deep.¹⁰ The preparation of ground for the various crops is described in the consideration of those crops.

FERTILIZERS AND SOIL AMENDMENTS.

The failure of the colonial farmers to rotate crops was one reason for the rapid exhaustion of their lands. Another cause was their neglect to replace organic material, to keep up the humus content of the soil. The animal manure which in their mixed husbandry was always available was uniformly neglected.¹¹ If used at all it was applied sparingly to only a few crops, chiefly to maize and potatoes. In explaining the neglect of manuring, we must keep in mind that south of New York most of the livestock ran at large all the year through, and even in New England the period of pasturage extended over 9 or 10 months of the year.¹² Consequently the amount of barnyard and stable manure which could be collected was small in proportion to the number of stock kept. Nevertheless, the failure to utilize the available supply astonished contemporary observers. Harriot relates¹³ that on the farm which he purchased on Long Island there were “some hundred loads of rich manure which had been collecting for several years, to the great damage of the buildings.” This accumulation was looked upon by his neighbors as an encumbrance merely, and the former owner advised him to move his barn, as this would be an easier way out of the difficulty than moving the manure. A similar state of affairs was described by La Rochefoucauld¹⁴ in Lebanon, Connecticut.

Besides barnyard manures, organic materials in the form of fish and rockweed were utilized by farmers in the shore towns. The use of rockweed in Maine was described by General Lincoln¹⁵ as follows:

“This rockweed makes a most excellent manure, is well calculated to bury under the furrow, or to spread, in the month of April, on our meadows. A dressing of about

⁸ *Information Respecting America*, 137. On the introduction of clover see also Strickland, *Observations*, 42.

⁹ I, 81.

¹⁰ Tilton in *American Museum*, V, 376.

¹¹ *American Husbandry*, I, 143; Kalm, *Travels*, I, 102; Scot, *Geographical Description of Pennsylvania*, 23.

¹² See p. 107.

¹³ *Struggles Through Life*, II, 216.

¹⁴ *Travels*, I, 516.

¹⁵ In Mass. Hist. Soc. *Collections*, 1st series, IV, 144.

ten loads upon an acre will last for three years. In that period it comes again to perfection on the rock, so that the returning wants of the lands will find a continual supply, from the same source. After a storm, large quantities of this manure will be found washed up to highwater mark, whence it is easily carted upon the lands. But the most usual mode of obtaining it, is by pulling or cutting it from the rocks, and loading it into carts, where that can be done; where it cannot, it may be loaded into scows. The supply of rockweed is immense, for it generally grows, in these counties, on all the shores which are washed by the sea. . . ."

The farmers along Long Island Sound made liberal use of whitefish for fertilizer. In June and July the fish were taken in seines in immense quantities; 10,000 of them to the acre was considered a liberal application. Dwight¹⁶ wrote:

"These fish are sometimes laid in furrows, and covered with the plough. Sometimes they are laid singly on the hills of maize, and covered with the hoe. At other times they are collected in heaps, formed with other materials into a compost; carted upon the ground; and spread in the same manner, as manure from the stable. A single net has taken 200,000 in a day. They are sold for a dollar a thousand; and are said to affect the soil advantageously for a considerable length of time."

After 1750 calcareous materials—limestone, marl, and finally gypsum—began to come into use as soil amendments. Kalm¹⁷ noted the use of limestone near New Brunswick, New Jersey, in 1748:

"The people however pretend that this stone is a very good manure, if it is scattered upon the corn-fields in its rubbish state, for it is said to stifle the weeds: it is therefore made use of both on the fields and in gardens."

In Pennsylvania, in the tract between the Susquehanna and Schuylkill Rivers, Pownall¹⁸ reported: "Every farmer has a Limekiln burnt for the dressing of his Land, and they raise a great deal of Wheat." Lime-burning was a by-industry of pioneering on the Maine coast¹⁹ but the product seems to have been exported rather than used by farmers. The marl deposits of New Jersey were known but little utilized before the end of the eighteenth century.²⁰

A most important innovation was the use of calcium sulphate, known variously as gypsum, plaster of Paris, and land plaster. Credit for the introduction of gypsum from Europe has been given to the German immigrants to Pennsylvania, probably because the new "fertilizer" was used only in the neighborhood of Philadelphia.²¹ According to Richard Peters,²² however, gypsum was brought to America a few years before the Revolution by a Mr. Barge of Philadelphia, and was first used by the German farmers some 10 or 12 years thereafter.

The "gentlemen farmers," men primarily interested in the professions and in politics, such as Logan and Peters in Philadelphia and Chancellor Livingston in New York, who were taking a keen interest in agricultural improvement, experimented extensively with gypsum and wrote enthusiastically of its

¹⁶ *Travels*, II, 511, 515, III, 303. See also N. Y. Soc. for Promotion of Useful Arts, *Transactions*, I (2d. ed., 1801), 231.

¹⁷ *Travels*, I, 231.

¹⁸ *Topographical Description* (1775), p. 28.

¹⁹ *Mass. Hist. Soc. Collections*, 1st series, IV, 23.

²⁰ *Philadelphia Agric. Soc. Memoirs*, V, 4.

²¹ Strickland, *Observations*, 44.

²² *Philadelphia Agric. Soc. Memoirs*, I (1815), pp. 163, 166.

merits.²³ In at least two regions—the Connecticut Valley and Southeastern Pennsylvania—gypsum was in general use by farmers on grass lands and on grain crops. Schoepf²⁴ wrote in 1783:

“About Philadelphia and Germantown, Whitemarsh, Lancaster, and York the use of plaister for grass and plow-land has recently become a favorite practice, because there is less trouble involved than in the collecting, lading, hauling, and spreading of the common dung of cattle—trouble which the farmer here does not willingly submit to.”

In Hadley, Massachusetts, and in East Windsor, Connecticut, Dwight found that the use of gypsum had greatly increased crop yields and raised land values.²⁵

INFLUENCE OF THE NEW YORK MARKET.

In towns near New York City the presence of a ready market stimulated intensive cultivation and the use of large quantities of a variety of manures. Sweepings from the city streets were used to produce large crops in New Jersey towns and in Westchester County, as well as on Western Long Island.²⁶ On the sandy soil of the latter gypsum was a failure, but the farmers set to work to renew their depleted soils from a variety of other sources. Dwight was greatly impressed with the energy which they displayed. He wrote:²⁷

“Within this period [i. e., 1789–1804] the inhabitants, with a laudable spirit of enterprise, have set themselves to collect manure, wherever it could be obtained. Not content with what they could make, and find, on their own farms, and shores, they have sent their vessels up the Hudson, and loaded them with the residuum of potash manufactories; gleaned the streets of New-York; and have imported various kinds of manure from New-Haven, New-London, and even from Hartford. In addition to all this, they have swept the Sound; and covered their fields with the immense shoals of white-fish with which in the beginning of summer its waters are replenished. No manure is so cheap as this, where the fish abound: none is so rich: and few are so lasting.”

THE GRAIN CROPS.

Indian corn, whose importance in the seventeenth century we have already remarked, was still the predominant cereal at the end of the eighteenth century. In New England it was “the grand product of the country on which the inhabitants principally feed”;²⁸ Dwight wrote²⁹ that “maize is nearly as valuable to this country as all other kinds of corn united, and yields a crop much more certain, and much more extensively useful than any other. . . .” The importance of Indian corn in relation to other cereals in the older communities of New England is indicated by table 8, compiled from the Massachusetts valuation returns of 1801.

²³ Philadelphia Agric. Soc. *Memoirs*, I (1815), pp. 166–180; New York Society for Promotion of Useful Arts, *Transactions*, I (1792), pp. 34–56; Logan, *Fourteen Agricultural Experiments*, 24.

²⁴ *Travels*, I, 196.

²⁵ *Travels*, I, 352; II, 279 (1821 ed.).

²⁶ N. Y. Soc. for Promotion of Useful Arts, *Transactions*, I (2d. ed., 1801), p. 238.

²⁷ *Travels*, III, 303 (1821 ed.).

²⁸ *American Husbandry*, I, 50.

²⁹ *Travels* (1821 ed.), II, 73.

TABLE 8.—*Grain crops in six counties of Massachusetts, 1801.*

Grain.	Hampshire County.		Berkshire County.		Worcester County.		Middlesex County.	
	Bushels.	P. ct. of total.	Bushels.	P. ct. of total.	Bushels.	P. ct. of total.	Bushels.	P. ct. of total.
All grains	525 722	100	309,356	100	599,799	100	376,614½	100
Indian corn	310,787	59.1	156 312	50.5	386,130	64.4	276,929	73.6
Rye	120,468	22.9	56,479	18.3	75,932	12.7	64 943	17.2
Barley	1,016	0.2	933	0.3	9,053	1.5	13,430	3.6
Oats	73,043	13.9	66,308	21.4	105,324	17.5	16,597	4.4
Peas and beans.	2,640	0.5	2,962	1.0	4,669	0.8	4,215½	1.1
Wheat	17,768	3.4	26,362	8.5	18,691	3.1	500	0.1

Grain.	Norfolk County.		Essex County.		Summary.	
	Bushels.	P. ct. of total.	Bushels.	P. ct. of total.	Bushels.	P. ct. of total.
All grains	140,414	100	239,369½	100	2,191,275	100
Indian corn	118,021	84.1	200,618	83.8	1,448,797	66.1
Rye	11,178	8.0	14,512	6.1	343,512	15.7
Barley	8,105	5.8	14,634	6.1	47,171	2.2
Oats	2 174	1.5	7,890	3.3	271,336	12.4
Peas and beans	885	0.6	630½	0.3	16,002	0.7
Wheat	51	..	1,085	0.4	64,457	2.1

In the Middle States Indian corn was an important source of human and animal food, but, owing to the competition of wheat, a successful cash crop, it did not occupy the predominant position which it held in New England.³⁰

CULTIVATION OF MAIZE IN NEW ENGLAND—VARIETIES.

The method of cultivation of maize in New England was described by Dwight³¹ as follows:

“Maize is planted in hills, from three to four feet apart, in a manner resembling a quincunx. The number of stalks in a hill should be not more than four nor less than three. The ground is afterwards broken, sometimes with a harrow, made in the form of a triangle, and sometimes with a plough; each drawn by a single horse. In stony grounds a larger plough is used; and is drawn by a yoke of oxen. The ground is then cleaned with the hoe. The process is repeated at least three times, and not unfrequently four: at the last of which the earth is raised to the height of from four to six inches, around the corn, and is denominated a hill; whence every planting is called a *hill of corn*. The hill is made, to give a better opportunity for the roots, which, when the stalk is grown to a considerable height, shoot from it several inches above the surface, to insert themselves in the ground with more ease, and less hazard of failure. These roots are called braces; because they appear to be formed for the sole purpose of supporting the stalk.”

³⁰ *American Husbandry*, I, 160; Watson, *Buckingham and Solebury (Penn.)* in *Hist. Soc. of Penn. Memoirs*, I, 306.

³¹ *Travels* (1821 ed.), I, 108. See also Douglass, *British Settlements*, II, 204.

Much of our information regarding Indian corn in New England in this period is derived from Dwight's ³² careful observations. He catalogued the following varieties:

Names.	Color.	Varieties.	Rows of kernels.
Canada corn	Yellow	two	{ 8 12
Flint	{ Yellow Blue Red }	two { large small }	8
Nantucket	Yellow	one	12
Chicken	Yellow	one	8
Sweet	White	one	8
Long-Island	White	two	{ 8 } sweet, { 12 } insipid.
Guinea	White		
Virginia	White	one	{ from 12 upwards, shaped like a gourd seed.
Carolina	White	one	8
Missouri	Yellow	one	8

"The earliest, and smallest, of these is the Chicken corn; and the next the eight rowed Canada. The next after these is the Sweet. All these may in a favourable season be planted so early as to furnish seed for a second crop, which will come to perfection the same season, at New-Haven. The Chicken corn rarely exceeds the height of five feet; the Canada seven; and the Sweet eight. The Nantucket differs little from the Canada, except that it is later. The ears of the Chicken corn are scarcely more than four inches in length; and its produce is trifling in quantity and value. The Sweet or Shrivelled corn, so called, because, when it is ripe, the kernels are remarkably shrivelled, and the Long-Island Sweet, which is large, and comparatively late, are, when in the milk, the most delicious of all culinary vegetables.

"The Flint corn grows to the height of ten feet; and is the heaviest, the most nutritious, and most productive of all the species.

"The Carolina, and Missouri, grow at New-Haven to the height of fifteen feet; but the season is rarely long enough to bring either of them to perfection."

In a system of agriculture so extensive in character the amount of labor spent in the tillage of maize seems extraordinary. The explanation lies partly in the fact that Dwight was undoubtedly describing the practices of the best farmers. Jared Eliot ³³ had observed:

"Indian Corn seldom is tended as it ought to be; if there be any ploughing between the Rows it is shallow, just so as to kill Weeds, but not so as to make a great Quantity of soft mellow Earth."

The author of *American Husbandry* ³⁴ remarked in 1775 that although ploughing between the furrows had become a usual practice in some parts of New England, cross-ploughing was practiced "only by good farmers." However, maize was recognized as an exhausting crop, and as little or no manure was applied to the land, it had become evident that good tillage was essential if any kind of a crop was to be obtained.

³² *Travels* (1821 ed.), II, 311.

³³ *Field Husbandry* (1760), 121.

³⁴ I, 50.

MAIZE IN NEW SWEDEN.

Acrelius, in his *History of New Sweden*, gave an account of maize which indicates the general methods prevailing in the region of Delaware Bay. He wrote: ³⁵

"Maize is planted at the end of April or the beginning of May. Four furrows are plowed close to one another, and then five or six steps from these four other furrows; and so over the whole field. The plowing is done in the month of March. For the planting is used a broad hoe, wherewith the earth is opened to the depth of three or four inches, into which are cast five grains of corn, which are then covered with the hoe. Sometimes also they add two Turkish beans, which thrive very well with the maize, and run up its stalks. Each place thus planted is called a *hill*. An equal distance is kept between each hill, so that the rows may be straight either lengthwise or crosswise. As soon as the young plant comes up it is plowed over, and even harrowed, so that it may be free from weeds. When the plants are half an ell ³⁶ high, the ground is hoed up around them; and again when they are two ells high. In the month of September, when the maize has obtained its greatest growth, although not ripe, the strongest blades are cut off for fodder. They then plow between the rows of corn, sow wheat, and harrow it in; and this, in the next year, gives a full crop. By the end of October the ears are ripe, pulled off on the field, and carried home. The stocks and roots are torn up during the winter, when the ground is loose, to make the fields clean."

Cultivation by ploughing and cross-ploughing was noted by Strickland in New York. ³⁷

Manasseh Cutler wrote in his diary when near Philadelphia: ³⁸ "In some places I saw fields of corn, the rows of which I judged to be a mile in length. The people do not hoe their corn at all, but plow it both ways."

In the Middle Colonies other grains—wheat, rye, or oats—were often sowed in the furrows between the rows of corn, a practice which not only interfered with tillage, but hastened the exhaustion of the soil. ³⁹ Cornstalks were fed to cattle in all regions, and in the Middle Colonies the blades were utilized as well. The blades, as Acrelius wrote, were picked off before the ears were ripe and the stalks piled in stacks and fed during the winter. ⁴⁰

WHEAT—SHIFT FROM OLD TO NEW SOILS IN NEW ENGLAND.

Wheat had become during the eighteenth century more and more a special crop. In some parts of New England it had begun to fail before 1700 and from 1700 to 1750 there was a noticeable shifting of production from the older towns to the newer settlements in the north and west. Eliot in 1747 remarked of Connecticut that "many are inclined to remove to new places that they may raise wheat," ⁴¹ and again, in 1754, he wrote: ⁴²

"It is high Time something were done; our old Towns raising very little wheat, it is purchased at the new Towns, and these new Towns will be old in Time; and then what shall we do unless some better Way can be found to manage our old Land. . . ."

³⁵ In Pennsylvania Hist. Soc. *Memoirs*, XI, 149.

³⁶ The Swedish ell (aln) is equal to nearly 2 English feet; but it can scarcely be so much as here used by our author, as is evident from what he says of the height of potatoes (4 ells) when hilled. He no doubt means inches. (Note by the translator.)

³⁷ *Observations*, 39.

³⁸ *Cutler*, I, 252.

³⁹ *American Husbandry*, I, 134, 143; Acrelius, in Hist. Soc. Penn. *Memoirs*, XI, 149; Tilton, in *American Museum*, V, 376.

⁴⁰ Kalm, *Travels*, I, 159; *American Husbandry*, I, 99; Judd, *Hadley*, 356; Mass. Society for Promoting Agriculture, *Papers* (1807), pp. 17, 18, 19.

⁴¹ *Field Husbandry*, 24.

⁴² *Ibid.*, 119.

By the end of the century the wheat crop had practically disappeared from eastern Massachusetts (see table 8, p. 90), and wheat bread had become practically unknown on farmers' tables throughout most of New England. Wheat was an important crop only in western Connecticut and Massachusetts, and in Northern Vermont.⁴³ Of the latter region we read:⁴⁴

"In the absence of a stable currency, the standard of value for many years, before and after 1800, was a bushel of wheat, the staple product of the farms, for which there was a steady demand and a more nearly average value, one year into another, than anything else. Taxes were paid in wheat, the minister's salary and the school master's wages were computed in it, and notes are extant to be paid in wheat, which sometimes amounted to hundreds of bushels. It is impossible to state, or even to estimate, the amount of wheat raised in Ryegate, but it amounted to many thousands of bushels. On some of the large farms hundreds of bushels were raised annually."

SUCCESS OF WHEAT IN THE MIDDLE COLONIES.

In the Middle Colonies, on the other hand, wheat was cultivated with continued success throughout the eighteenth century. Acrelius wrote of the lower Delaware River region in 1759:⁴⁵ "Wheat is the land's chief product." Douglass claimed in 1749 that New Jersey raised more wheat than any of the English colonies in America.⁴⁶ The author of *American Husbandry* called wheat "the grand article" of the province of Pennsylvania and commended highly the quality of wheat exported from New York, where it grew particularly well on Long Island and in the Mohawk Valley.⁴⁷

As New England grew more and more regularly dependent on outside sources for her wheat-supply, the export trade from Pennsylvania and New York increased, greatly stimulating the growing of wheat as a cash crop in the latter region.⁴⁸

BLACK STEM-RUST IN NEW ENGLAND.—LEGISLATION AGAINST BARBERRIES.

A part at least of the responsibility for the failure of the wheat crop in New England may be assigned to the so-called blast or mildew, a parasitic fungus growth now recognized as the black stem-rust. Since its first appearance about 1660, it spread rapidly, and by the end of the eighteenth century it was generally prevalent wherever wheat had been cultivated for a number of years. The cause of the blight was uncertain. Farmers believed that barberry bushes had some connection with the "blasting" of grain, since they had observed that the grain in the neighborhood of such bushes was most likely to be affected.⁴⁹ Acting upon this knowledge they secured the passage of legislation for the destruction of barberries. Connecticut, the first State to act, passed a law in 1726⁵⁰ which, after reciting in guarded

⁴³ *American Husbandry*, I, 52; Dwight, *Travels* (1821 ed.), I, 376.

⁴⁴ Miller and Wells, *History of Ryegate (Vermont)*, 97.

⁴⁵ Penn. Hist. Soc. *Memoirs*, XI, 148.

⁴⁶ *British Settlements*, II, 293.

⁴⁷ I, 157; 97.

⁴⁸ See pp. 142-144.

⁴⁹ Dwight gives a number of instances of this kind which had come to his knowledge. *Travels* (1821 ed.), I, 381-383.

⁵⁰ *Conn. Colony Public Records*, VII, 10.

language that "the abounding of barberry bushes is thought to be very hurtful," granted power to the town meetings to take steps to eradicate them. It is not known how many towns took action under this law or that of 1779 which amended it, but New Haven at least did so, appropriating \$200. in the year 1796 for the destruction of barberry bushes within its limits with resulting benefit to the wheat crop.⁵¹

Meanwhile Massachusetts and Rhode Island had both enacted similar legislation. In the preamble to the act of 1754 the legislators of the former colony made the bold statement that "it has been found by experience that the blasting of wheat and other English grain, is often occasioned by barberry bushes." Their procedure, however, against the obnoxious plants was quite as timid as that of Connecticut. They did, it is true, order⁵²

"That whoever, whether community or private person hath any barberry-bushes standing or growing in his or their land within any of the towns in this province he or they shall cause the same to be extirpated or destroyed on or before the tenth day of June *Anno Domini*, one thousand seven hundred and sixty."

But the law imposed no penalty for non-compliance, providing merely that if the owner of land failed to remove his barberries any person might enter and remove the bushes, collecting from the owner for his services. The law expired by limitation in 1764.

It remained for Rhode Island to pass an act compelling barberry eradication. In 1766 this colony had passed special legislation for the Town of Middletown, which was so cumbersome in its machinery as to be doomed to failure. In 1772 there followed a much more effective piece of legislation, which provided:⁵³

"That if any Freeholder in this Colony shall apply to any Person having Barberry Bushes growing in his Field or Inclosure to destroy them, and the Owner of the Land shall neglect or refuse to cut them annually, or otherwise destroy them, he shall pay as a Fine, the Sum of Ten Pounds Lawful Money. . . ."

Although the farmers and their representatives had become so convinced of the destructive effects of the barberries that they had incorporated their views into legislation, the learned men of the community were skeptical. Dwight, who gave much thought to the causes of the blast, eventually rejected the barberry theory. Although he recognized that barberries and rust often were found in the same areas, as for instance in the eastern counties of Massachusetts, yet he also discovered other areas where barberries were absent and yet the grain was destroyed. His own explanation was that the use of barn-yard manure forced the wheat too rapidly during the early stages of its growth.⁵⁴ The sequel, of course, has shown that the practical men were right, the theorists wrong. Investigations of European botanists, published in 1870, show conclusively that the barberry acts as a host to the wheat parasite in certain stages of its growth.⁵⁵

⁵¹ Dwight, *Statistical Account of New Haven*, 64.

⁵² Ch. X, Acts of 1754, in *Mass. Temporary Acts and Laws*, 1755, p. 153.

⁵³ *Rhode Island Laws*, August 1772, p. 46, quoted by Davis in *Col. Soc. Mass. Publications*, XI, 92.

⁵⁴ *Travels* (1821 ed.), II, 340-345.

⁵⁵ *American Journal of Science*, 2d series, XLIX (1870), p. 406. See also Stakman, in U. S. Dept. Agric., *Yearbook* (1918), 75-100.

SEED SELECTION—WINTER VS. SPRING WHEAT.

The destruction of barberries was not alone relied upon in combating the rust. Experiments were made in seed selection with a view to getting a variety which would mature quickly. It was remarked by Hutchinson⁵⁶ in 1764 that the wheat which matured earliest suffered least from the blast and on that account spring wheat suffered more than grain sown in the autumn. He mentioned a new variety of wheat recently introduced from Portugal as less subject to the blast than the varieties usually grown. Jared Eliot⁵⁷ had mentioned somewhat earlier "a sort of Summer Wheat brought into Use, not subject to Blast as the sort we had formerly among us."

Winter grain became, in the latter half of the eighteenth century, more generally sown than summer grain, not only in New England but in the Middle Colonies as well,⁵⁸ and this was in part at least owing to the prevalence of the rust. Shoepf⁵⁹ wrote of the farmers in Bedford County, Pennsylvania:

"They (the farmers) must always get their winter wheat into the ground before the end of August, because otherwise the following year it will not be large and strong enough to be safe against the mildew."

The failure of wheat crops in New England is not to be attributed entirely to the rust or to the Hessian fly, which followed. The author of *American Husbandry*⁶⁰ remarked:

"They say they cannot grow good wheat; that they do not grow good wheat I am sensible, but I attribute it to their throwing it into such systems as this, 1 maize, 2 maize, 3 wheat, 4 oats, 5 wheat, &c. &c. In which case, the wheat may be thin, thrivelled, and husky, without its being the fault of the climate; I am of opinion, under such culture, it would be the same in Britain."

The Middle Colonies also suffered from both of these pests. But with the initial advantage of better soil, the Pennsylvania and New York farmers gave their wheat fields better tillage and developed crops which more successfully withstood the attacks of parasites and insects.

THE HESSIAN FLY.—ITS ORIGIN.—EFFECTS OF ITS RAVAGES.

Another destructive enemy of the wheat crop was the Hessian fly, a pest which first made its appearance on Long Island during the Revolution. A contemporary writer claimed that it was introduced in the beds of Hessian mercenaries or in the provender for their horses.⁶¹ No great injuries to the wheat crop were reported until 1785 or 1786, when it spread into New Jersey. By 1788 it had crossed the Delaware and caused great destruction in the eastern counties of Pennsylvania. In 1797 the fly was found west of the Allegheny Mountains.⁶² By 1800 it had spread throughout Connecticut

⁵⁶ *History of Massachusetts*, I, 485, note.

⁵⁷ *Field Husbandry*, 53.

⁵⁸ Acrelius, in *Penn. Hist. Soc. Memoirs*, XI, 148; Kalm, *Travels*, I, 166; *American Husbandry*, I, 97, 157; Schoepf, *Travels*, I, 44.

⁵⁹ *Travels*, I, 224.

⁶⁰ I, 77.

⁶¹ Bordley, *Essays and Notes*, 242.

⁶² *American Museum*, I, 531; IV, 47; *Philadelphia Agric. Soc. Memoirs*, V, 143; *Letters of Phineas Bond*, in *Am. Hist. Asso. Report* (1897), p. 456.

and was steadily working its way into the back country of New England and New York.⁶³

In some districts, notably on Long Island, the farmers gave way before the pest, replacing wheat with rye. Elsewhere methods were devised to restrict its ravages. It was discovered that the first sharp frost killed the adult insect and consequently late sowing was practiced. In Connecticut, by 1811, the date of planting had been shifted from the third week in August to the last week in September or the first of October.⁶⁴

Changes also occurred in the varieties of wheat cultivated. In Connecticut, before the fly appeared, says Dwight:⁶⁵

“the white bald wheat was almost exclusively cultivated. This was much the best wheat, ever known in New-England. It was less exposed to injuries from the frost, or the blast, than any other. It yielded more by the acre; the grain was heavier; the flour was whiter, and better tasted; and the bread fresh and moist much longer. This wheat was, more than any other, the favorite food of the fly; and has, therefore, been for many years disused. The yellow-bearded wheat has been substituted for it extensively. Several other kinds have been also sown, with different success.”

In the Middle Colonies spelt (*T. sativum* var. *spelta*), a variety of wheat raised by the Germans for horse-fodder and for bread, was found to be more resistant to the fly than other varieties.⁶⁶

Indirectly the Hessian fly rendered good service to wheat cultivation. It was discovered that the crops planted on the well-manured and more thoroughly cultivated ground suffered less. Increased attention was given to fertilization and tillage, resulting in some instances in increased yields per acre.⁶⁷

TILLAGE OF WHEAT.

Wheat and other small grains were often sown in the furrows when Indian corn was cultivated, the land thus requiring no especial preparation for the succeeding crop, or, after the Indian corn had been harvested, the stubble was ploughed under and the seed sown and harrowed in. If wheat was to be sown on grass land, a summer fallow often intervened. The land was broken up in the fall, or in the early spring, and ploughed once or twice before fall when the grain was sown and harrowed in. In the autumn the cattle were often pastured on the sprouting grain.⁶⁸

RYE.

Rye was a widely distributed crop. It was grown on practically every farm, being confined principally to sandy and gravelly soils. In New England, on account of the decline of wheat-growing, rye flour and Indian meal made the standard “rye and Injun” bread of the farm families. The thrifty Germans of Pennsylvania, although growing large crops of wheat for market,

⁶³ Dwight, *Travels* (1821 ed.), I, 49; III, 300–302.

⁶⁴ Dwight, *Statistical Account of New Haven*, 22.

⁶⁵ *Loc. cit.*

⁶⁶ N. Y. Soc. for Promotion of Useful Arts, *Transactions*, IV, pt. II (1819), p. 126.

⁶⁷ *Ibid.*, I, pt. I, 57; Bordley, *Notes and Essays*, 30, 243.

⁶⁸ Acrelius, in *Penn. Hist. Soc. Memoirs*, XI, 148; Tilton, in *American Museum*, V, 376; Schoepf, *Travels*, I, 130.

raised rye for their bread-flour.⁶⁹ Rye, as well as wheat and corn, was in demand at local distilleries for the production of whisky and gin. Rye seems to have been chiefly used for distillation. Strickland wrote:⁷⁰

“All the back country of America is very favourable to the growth of rye; crops, producing from twenty to thirty bushels, are commonly met with; this grain is entirely consumed in the distillation of whisky, chiefly for the consumption of the Irish frontiersmen, except among the Germans in Pennsylvania, who use it for bread.”

Rye straw, as well as that of barley and oats, was used to supplement hay as winter fodder for livestock.

MINOR GRAINS—BARLEY, OATS, BUCKWHEAT.

The author of *American Husbandry* wrote:⁷¹

“Barley and oats are very poor crops, yet do they cultivate both in all parts of New England: the crops are such as an English farmer, used to the husbandry of the eastern parts of the kingdom, would think not worth standing; this I attribute entirely to climate, for they have land equal to the greatest productions of those plants.”

The barley of New England, although regarded there as “a poor crop,” was highly esteemed in the Middle States and was exported to New York and Philadelphia, where it was brewed for beer.⁷² Oats, grown chiefly for feeding, horses, were also bad; “lean, chaffy, and of a dark Colour.”⁷³ Strickland wrote:⁷⁴

“I never saw any oats that would be marketable in England, except some in the German tract in Pennsylvania, and they would admit of comparison with such only as we should esteem very moderate.”

Only where Scotch settlers were numerous were oats grown for the production of oatmeal.⁷⁵ Buckwheat was generally cultivated in New York and New Jersey, but was not much regarded in New England or in Pennsylvania. It was often sown as a catch crop on land from which winter grain had been harvested. The land was ploughed and the seed harrowed in. Buckwheat was fed to horses, and was also used for fattening poultry and swine. In some sections as in New Jersey buckwheat cakes were already a familiar dish on the farmer's table.⁷⁶ In Pennsylvania some farmers had begun at the end of the century to plough under buckwheat as a green manure.⁷⁷

POTATOES.

The introduction in the last half of the eighteenth century of the general cultivation of potatoes marked an important step in American agricultural history. In New England the first cultivators of potatoes were the Scotch-

⁶⁹ Rush in Penn. German Soc. *Proceedings and Addresses*, XIX (1910), 62.

⁷⁰ *Observations* (1794), 47; see also Cooper, *Information Respecting America*, 122; Temple and Sheldon, *Northfield, Massachusetts*, 342; Watson, *Essex County, New York*, 435; Pennsylvania Archives, 1st series, V, 229.

⁷¹ I, 53.

⁷² Belknap, *New Hampshire*, III, 142.

⁷³ Douglass, *British Settlements*, II, 207.

⁷⁴ *Observations* (1794), 48.

⁷⁵ Miller and Wells, *Ryegate, Vermont*, 190.

⁷⁶ *American Husbandry*, I, 100, 135, 165; Acrelius, in Penn. Hist. Soc. *Memoirs*, XI, 149; Cooper, *Information Respecting America*, 138; Schoepf, *Travels*, I, 194.

⁷⁷ Bordley, *Essays and Notes*, 52.

Irish immigrants, who came in 1718.⁷⁸ The natives took up the new crop reluctantly.

“They [potatoes] were kept as a rarity, to eat with roast meat. They were at first planted in beds, as beets and carrots. Three bushels of them were considered a large crop for one farmer’s family.”⁷⁹

After the Revolution potatoes came into general use as food in New England, and perhaps somewhat later in New York and Pennsylvania. The peculiar adaptation of Maine soil and climate for potatoes was discovered before the end of the century.⁸⁰ The method of cultivating potatoes on the Delaware was described by Acrelius⁸¹ as follows:

“Potatoes are quite common, of two kinds—the Irish and the Maryland. The Irish are also of two kinds: the first round, knotty, whitish, mealy, somewhat porous. They are planted thus; upon a smooth and hard ground a bed of dung is formed. Portions of this are thrown upon the potatoes, which are then covered with ground of even the poorest kind. When the stalks have come up about four ells high, they are again hilled up with the same kind of earth, in order to strengthen the roots, which are thus considerably increased in number. The other kind is long, branching, thick, reddish, juicy, and more porous. For these a long ditch, the depth of a spade, is dug; the bottom of which is covered with manure, set with pieces of potatoes, and covered over with earth. When the stalks come up, they are treated as those above mentioned.”

In New England potatoes were planted in much the same manner as Indian corn.⁸²

“The ground being broken up, but not harrowed, a large hole was made by cutting out a piece of the sod the whole depth of the ploughing. Into the bottom of this hole was thrown a shovelful of dung, if so much could be spared, then a scanty portion of seed, which lay far below the surface of the ground, over which was made an enormous hill which must receive considerable addition at hoeing. In this way, with double the necessary labor, something like half a crop was obtained.”

FLAX.

The cultivation of small patches of flax had become increasingly general during the eighteenth century. In part this was owing to the increased production of linen textiles in the farm homes, a branch of industry which was greatly stimulated by the immigration of the Scotch-Irish. But flax was grown not only for the fiber but for the seed, one of the few products which could be marketed. A part of the seed was crushed in local oil-mills, and considerable quantities were exported to Europe.⁸³ In Fairfield County, Connecticut, the soil proved well adapted to flax, and it became a special crop in that region. From a single township about 20,000 pounds of seed were annually exported.⁸⁴

TOBACCO.

Farmers addicted to the use of tobacco continued to raise small quantities in their gardens for their own use. The consumption and cultivation of

⁷⁸ Judd, *Hadley*, 358.

⁷⁹ Felt, *Ipswich*, 40; see also Lyman, *Easthampton, Massachusetts*, 67; Temple, *Whately, Massachusetts*, 76.

⁸⁰ Sewall, in *Mass. Hist. Soc. Collections*, 1st series, III, 9; Ripley, in the same, 1st series, IX, 141; Allen, *Maine Hist. Soc. Collections*, 1st series, VII, 272.

⁸¹ In *Penn. Hist. Soc. Memoirs*, XI, 150.

⁸² Wheeler, *Brunswick, Maine*, 220; see also *Mass. Soc. for Promoting Agric. Papers* (1807), p. 21.

⁸³ See p. 134.

⁸⁴ Dwight, *Travels* (1821 ed.), III, 519.

tobacco increased after the Revolution and in a few localities, as in the towns in the Connecticut Valley, occasional exports of tobacco gave promise of its future commercial importance.⁸⁵

PEAS.

The cultivation of field peas as a forage crop had declined, owing to the ravages of the pea-bug in New England, Pennsylvania, and New Jersey, but peas were still successfully grown in northern New York.⁸⁶

GARDEN VEGETABLES.

The eighteenth century farmers paid little attention to gardens. They dug up and fenced a small piece of ground near their houses and then left its care to the women of the household, already overburdened with the household industries. The Germans of Pennsylvania gave more attention to gardens, but, in general, only a few varieties of vegetables appeared on the farmers' tables. Turnips, onions, and cabbages were grown most generally and were occasionally fed to animals. Onions in a few localities, such as Wethersfield, Connecticut, and Barnstable, Massachusetts, were an important cash crop.⁸⁷ In the neighborhood of the coast towns a greater variety of vegetables was grown for market.⁸⁸

FRUIT.

In New England apples were by far the most abundant fruit. Dwight⁸⁹ catalogued the following varieties:

"Pome royal, Golden Apple, Jennetin, Newtown pippin, Fall pippin, October pippin, Golden pippin, Bellet bonne, Green Russet, Yellow Russet, Red Russet, Gilliflower, Plum Apple, Early Seek no further, Late Seek no further, Spitzenberg, Pearmain, Holden Sweeting, Green Sweeting, Greening."

Apples were utilized chiefly for making cider, which had become "the common drink of all its inhabitants, rich and poor alike. . . . In the cellars of the well-to-do houses a barrel of cider was always on tap, and pitchers of it were brought up at every meal and in the morning and evening."⁹⁰ Even children were given diluted cider when milk was scarce.⁹¹ Besides the domestic consumption, which was truly prodigious, there was an export market for cider and cider brandy, as well as for apples, in the West Indies. Under such conditions it is not surprising to find individual farmers making 25, 50, or more barrels of cider each year.⁹² The Massachusetts valuation returns for 1767 give 33,436 barrels as the quantity of cider produced in Middlesex County in that year, amounting to seven barrels for each

⁸⁵ Lees, *Journal* (1768), p. 10; Trumbull, *Hartford County, Connecticut*, I, 215; Judd, *Hadley*, 375.

⁸⁶ Kalm, *Travels*, I, 173; *American Husbandry*, I, 100; Judd, *Hadley*, 355.

⁸⁷ Dwight, *Travels* (1821 ed.), 226; Kendall, *Travels*, II, 129.

⁸⁸ Rush, in Penn. German Society *Proceedings and Addresses*, XIX, 65; Dwight, *Travels* (1821 ed.), II, 498; Deane, *New England Farmer*, 2d ed., 40, 352.

⁸⁹ *Travels*, I, 44, 45.

⁹⁰ Adams, *Three Episodes in Massachusetts History*, II, 686.

⁹¹ Earle, *Home Life in Colonial Days*, 148, 161.

⁹² *Diaries of Rev. Timothy Walker*, in N. H. Hist. Soc. *Collections*, IX, 166; *American Husbandry*, I, 56.

family or 1.14 barrels per capita. Not all the apples were crushed for cider. Besides those consumed in their natural state, large quantities were sliced and dried for winter use. In especially good years there still remained a surplus which was fed to cattle and swine. Peaches were grown more successfully in the region around New York and in New Jersey and Pennsylvania than farther to the northward. Every farmer had peaches and apples in abundance, so that after the demands of his family had been met and passers-by had helped themselves liberally and the swine had eaten what they could, there was still a remainder which rotted on the ground. Orchard fruit, as well as melons, constituted an important part of the summer diet of the people of the Middle Colonies. Peaches were sliced and dried in Pennsylvania, as apples were in New England and were also made into peach brandy.⁹³

In general, there was little systematic cultivation of fruit in this country before the year 1800. Once the trees were set out little attention was paid to orchards. As a result they became infested with worms and throughout New England there was complaint that the old orchards were dying out. "Choice varieties of apples, pears, peaches and cherries were known only to a few careful cultivators, and the number of varieties of these was quite limited as compared with the present day."⁹⁴ Only a few leaders in agricultural practice gave any attention to pruning and grafting or to the destruction of insect enemies.⁹⁵ In Pennsylvania and New Jersey greater care was taken of orchards. There trees were not only grafted and pruned, but the orchards were occasionally plowed and seeded with maize, rye, or oats.⁹⁶ Several large orchards and nurseries had been developed in the Middle Colonies, in one of which, that of Thomas Young of Oyster Bay, New York, there were over 27,000 apple trees.⁹⁷

SPECIAL CROPS—HEMP AND SILK.

The attempts to grow hemp throughout the northern colonies in the eighteenth century need explanation, for the amount of labor necessary in the cultivation of this crop and for the preparation of the fiber for market would seem to have doomed the experiments to failure from the beginning. But the northern farmers were bent upon finding an agricultural staple, something which could be sold to a wide market like the tobacco of Virginia; and besides, there was the stimulus of the bounties offered by the English and colonial governments.⁹⁸ Although grown with more success in the Middle Colonies, particularly in New Jersey, than in New England, hemp was never raised in quantities sufficient for the supply even of domestic shipyards. The failure of hemp to become an important crop was owing to its

⁹³ Kalm, *Travels*, I, 70, 72; *American Husbandry*, I, 156; Acrelius, in *Penn. Hist. Soc. Memoirs*, XI, 151; Weld, *Travels*, I, 91.

⁹⁴ Flint, in *Maine Board of Agric., 19th Annual Report*, 115.

⁹⁵ Dwight, *Travels* (1821 ed.), I, 76; Belknap, *New Hampshire*, III, 140.

⁹⁶ Acrelius, in *Penn. Hist. Soc. Memoirs*, XI, 152.

⁹⁷ Furman, *Long Island Antiquities*, I, 91; Dwight, *Travels* (1821 ed.), III, 322.

⁹⁸ Lord, in *J. H. U. Studies in Hist. and Pol. Science*, extra volume, XVII, 83-86.

inability to compete with grain crops for the limited supply of fertile land. The author of *American Husbandry*⁹⁹ observed of Pennsylvania:

"It is not want of good land in certain quantities, nor of climate, that prevents the export of hemp, but the demand for it at Philadelphia, which exceeds, for home consumption, what the province can raise. Improvements might be made, of which more hereafter, that would enable Pennsylvania to export hemp; but without a change in certain branches of rural economy, they never will raise this commodity for exportation. A people increasing at such an amazing rate, makes the necessaries of life so dear, that no other husbandry answers so well, that is, they possess not a staple that will pay them for a neglect of wheat and common provisions."

A similar situation prevented the realization of visionary dreams of the production of raw silk. Mulberry trees were common, and it was easy to show that silk worms could be fed and silk reeled from the cocoons. Various families did it, and in some sections, as for example in eastern Connecticut, enough silk was produced to attract attention. But the high price of labor proved an insuperable difficulty to the establishment of silk culture as a branch of northern farming.¹⁰⁰

CROP YIELDS.

Although no comprehensive statistical information is available, a general idea of the yield per acre of the various field crops may be obtained from the comments of the most reliable observers.¹⁰¹ As regards maize, 20 to 25 bushels an acre seems to have been considered an average crop on fairly good soil; crops of 40 to 50 bushels were sometimes secured under favorable conditions. Dwight's estimate of the average crop for Connecticut was 25 bushels, which is the same as Strickland's for New York.

Under the prevailing system of cultivation a fair average wheat crop in the Middle Colonies was probably between 10 and 15 bushels, although usually nearer the lower figure. Strickland estimated the average yield in New York at 12 bushels and in Pennsylvania and New Jersey at only 6 bushels. Under better than average conditions, as on new land in the Hudson and Mohawk Valleys, or among the German farmers of Pennsylvania, crops of 20 to 30 bushels might be obtained. The best crops reported anywhere were those of 40 to 50 bushels on land heavily manured with fish on Long Island. In New England the average yield seems to have been higher than in Pennsylvania and New Jersey, but this is probably owing to the fact that there wheat was grown only on the more fertile soils. Dwight put the average for Connecticut at 15 bushels and Belknap stated that in New Hampshire 20 bushels was considered "a paying crop" on the common uplands, although actually less was often obtained. Rye averaged from 10 to 15 bushels. The data on the minor cereals and on flax and potatoes are too fragmentary to be of value.

⁹⁹ I, 162; see also 102, 137, 151.

¹⁰⁰ Kalm, *Travels*, I, 123; *American Husbandry*, I, 165, 179; Coxe, *View of U. S.*, 93; Dwight, *Travels* (1821 ed.), I, 361.

¹⁰¹ Dwight, *Travels* (1821 ed.), I, 108; Strickland, *Observations*, 39, 42, 44; Belknap, *New Hampshire*, III, 136; *American Husbandry*, I, 98, 99, 100, 135, 157, 160, 166; Douglass, *British Settlements*, II, 208; Cooper, *Information Respecting America*, 113; Washington, *Letters on Agriculture*, 38, 72, 83; Schoepf, *Travels*, I, 130; Philadelphia Agric. Soc. *Memoirs*, I (1815), p. 99; Tilton, in *American Museum*, V, 379; Mass. Society for Promoting Agric. *Papers* (1807), 14-19; N. Y. Soc. for Promotion of Useful Arts, *Transactions*, I (2d ed., 1801), (1798), 240.

CHAPTER VIII.—GRAZING AND LIVESTOCK.

HAY AND PASTURAGE.

The seeding of tilled uplands with the so-called artificial grasses during the interval between grain crops marked an important step in crop management over the old system of weed fallow. It was a step of great significance, also, from the point of view of the livestock industry, for the creation of the so-called artificial meadows provided the farm animals with a very necessary addition to their scanty and unreliable forage. As the stocks of cattle increased, the pasturage afforded by the natural grasses in the woods and meadows tended to become exhausted. Kalm¹ reported in 1748 that the pasturage in the older settlements in Pennsylvania and New Jersey was failing, assigning as a reason the great increase in cattle which devoured the annual grasses so rapidly that they had no opportunity to ripen and seed themselves. On account of the persistence of the practice of burning the woods, the timber forage was also unsatisfactory and declining. The worn-out tillage lands which had been abandoned, either permanently or temporarily, to a weed fallow furnished a poor sort of pasture, often appropriately termed brush pasture. Perhaps one-half the area of the farm was devoted to a vast pasture lot "impoverished and skinned," producing weeds, sour grass, bayberry bushes, and briars.

"On this their ill-fated horses, cows, oxen, and sheep are promiscuously turned early in the season before there is a bite: but they nibble off the scanty growth of rubbish as it rises. Here they continue till winter: sometimes through the winter; so that the ground becomes poached and trod to a dead closeness."²

Hay was cut chiefly from the natural meadows and the salt marshes. Large quantities of coarse hay, chiefly the variety known as *Carex*, could thus be obtained with little effort, but as livestock increased these sources proved unreliable and after a drought cattle often suffered from lack of fodder. Eliot wrote (1747):

"The scarcity and high price of hay and corn is so obvious, that there are few or none Ignorant of it, at least here, and I suppose nearly the same other where, or worse; for sundry Vessels have been in these Towns from other parts, to load with sedge-grass to supply their want of fodder at home. This scarcity hath been gradually increasing upon us for sundry Years past. It is evident that the necessary stock of the Country hath out-grown the meadows, so that there is not hay for such a stock as the present increased number of people really need: such an high price of hay, takes off much from the profit of raising and keeping stocks. . . .

"This scarcity of Hay I account for in this manner: Our first Planters who settled down by the Sea, and those who settled by the large Rivers and Intervale, Lands, found so much salt Marsh by the Sea-side, and those on the Rivers and Intervale found so much mowing Ground more than they had Occasion for, that they Improved only such Parts as were best and nearest at hand, and let the Rest lie, and when by the increase of People they wanted more, they made use of what had been before Neglected, without

¹ *Travels*, I, 129; 134, 155.

² Bordley, *Essays and Notes*, 143.

any tho't or care to provide more; and Meadows not being easily or speedily bro't too, many are drove to great Straits. This may be one Reason why some inland Towns are better provided than some of the other Towns, as considering at first what they had to trust to." ³

In New Jersey the author of *American Husbandry* noted the excessive reliance in marsh hay, remarking that the result was that "in no province are all the four-footed animals worse treated." ⁴

IRRIGATION OF MEADOWS.

The irrigation of meadows had begun in the German settlements in Pennsylvania before 1750, and by the end of the century was a general practice there. "Watered meadows" were also found in a few localities in New England and in New York. The areas of the natural meadows were enlarged by diverting the brooks which flowed through them from their original channels, conducting them along the hillsides and then distributing the water by lateral ditches as widely as possible over the lowlands. Such improvements often entailed large investment of capital. But the resulting increase in the hay crops seem to have justified the expense. In Pennsylvania "farms were valued in proportion to the quantity of land capable of irrigation," and the watered meadows were so highly regarded that "when the original tracts came to be divided, the rights thereto were carefully set forth in the title-deeds, generally giving the use and control of the stream to the owners of the several tracts a certain number of days in each week alternately." ⁵

Another improvement of the mowing land was the draining of the salt marshes along the Delaware River by means of dikes and tide gates. Many thousand acres, according to Acrelius, ⁶ were thus reclaimed in the years 1745-1760. The land when dry was ploughed, seeded with grain and afterwards laid down to clover or other English grass. The undertaking did not prove a permanent success, because of the difficulty in keeping the dikes intact.

CULTIVATED GRASSES—CLOVER AND TIMOTHY.

Of greater significance than either irrigation or drainage enterprises was the making of the so-called "artificial meadows," i. e., the seeding of upland mowing with timothy, red clover, and other English grasses of the eighteenth century. English grasses were not unknown before 1700, having been sown usually by accident and occasionally by design. The progress of the eighteenth century consisted in the increased sowing of such grasses on tilled ground and in the substitution of selected seed for the sweepings of haymows. We find occasional references to clover growing in fields before the Revolution. Kalm ⁷ observed (1749) that

"Red Clover was sown in several places on the hills without the town [New York]. The country people were now employed in mowing the meadows. Some were already

³ *Field Husbandry*, 21, 23; see also Buck, *Bucks County, Penn.*, 56.

⁴ I, 138. See also Mass. Agric. *Repository*, II (1807), p. 29.

⁵ Ellis and Evans, *Lancaster County, Penn.*, 347. See also *American Husbandry*, I, 100, 166; Kalm, *Travels*, I, 308; Chastellux, *Travels*, 306; Dwight, *Travels* (1821 ed.), II, 265.

⁶ In Hist. Soc. Penn. *Memoirs*, XI, 154. See also Kalm, *Travels*, I, 330, 333.

⁷ *Travels*, II, 224.

mown; and the dry clover was put under cover, in order to be carried away the first opportunity."

Acrelius⁸ found Pennsylvania farmers in 1759 sowing clover-seed "after they have harrowed in their wheat to make the crop stronger." The rapid spread of clover culture dates, however, after the Revolution. Watson⁹ gives 1780 as the date of the first improvement of upland fields by clover in the neighborhood of Philadelphia. In Lancaster and Bucks Counties it was hardly known before 1800.¹⁰ Watson wrote:¹¹

"It became a wonder to see men making grass, and hauling it in from upland fields. Every body was delighted to see the effect of this new era in farming. The aged now can well remember the stirring interest which was every where excited by this important improvement. Before this time, a farmer at Germantown would consider one hundred acres of land as inadequate to provide his frugal living then, unless he had also a good portion of natural meadow to supply his stock. It soon came to be experienced that fifty acres of land, well tilled, produced enough to fill a barn of double the size before used."

A grass frequently seeded with clover was variously known as timothy in the Middle Colonies and Herd's grass in New England. It was used as a hay plant near Portsmouth, New Hampshire, as early as 1720 and was taken to New York and other colonies by one Timothy Hanson, whence its name. After 1750 it is frequently mentioned. Although long supposed to have been indigenous in America, it is now recognized as an Old World plant growing naturally in England and known there as cats-tail grass. To the America farmers, however, belongs the credit of having first recognized the value of timothy and having introduced its cultivation as a forage crop.¹² The author of *American Husbandry* was impressed with the large crop of timothy hay grown in New England, and Strickland¹³ was even more enthusiastic. He wrote:

"Timothy grass is extensively cultivated in the middle and northern states of the American Union, and I apprehend it to be the same as the *phleum pratense*, Cat's-tail grass, of European botanists. I have frequently seen extraordinary crops of it, growing thick as it could stand on the ground, three or four feet in height, and in some instances coarse as wheat straw; however, in this state, as it is cut before maturity, and as in the climate of America hay is always well cured, however succulent at the time of cutting, horses prefer it to every other kind of hay, and thrive better upon it. I cannot therefore but think it worthy of some fair experiments in this country. No other grass approaches it in produce; and it is particularly useful when mixed with red clover, in preventing it from falling too close to the ground."

The introduction of cultivated grasses, although of such recent date, by the opening of the nineteenth century had caused less reliance on the meadows for hay. In Pennsylvania, wrote Bordley¹⁴ in 1801:

"the irrigated and bottom meadow lands are now thought lightly of, in comparison with the very high estimation they were in before clover came into field culture. Still irrigated grounds are, as they ever will be, very valuable: but so sure and plentiful are clover crops, that the Pennsylvania farmers are less solicitous about meadows. Till lately a farm without irrigated or bottom meadow, was never much valued. Now, pur-

⁸ In Hist. Soc. Penn. *Memoirs*, XI, 154.

⁹ *Annals of Philadelphia*, II, 66 (1844 ed.).

¹⁰ Buck, *Bucks County*, 56; Ellis and Evans, *Lancaster County*, 349.

¹¹ *Annals of Philadelphia*, II, 66 (1844 ed.).

¹² Piper and Bort, in *Journal Am. Society of Agronomy*, VII (1915), p. 1.

¹³ *Observations*, 63.

¹⁴ *Essays and Notes*, 31, note.

chasers are less anxious for those articles, as they are sure of abounding in clover and hay from the arable upland.”

Table 9 indicates the relative importance for Massachusetts of the various sources of the hay crop. In reading the figures for yields per acre, one should keep in mind the taxpayers’ natural tendency to understatement.

TABLE 9.—Hay—English upland, fresh meadow, and salt marsh—acreage, tonnage and yield per acre, six counties in Massachusetts, 1801.

[From Massachusetts valuation returns.]

	Acres.	P. ct. of acreage.	Tons.	Tons per acre.
Hampshire County:				
Total hay crop.....	79,152	100	65,410	0.83
English upland	46,941	59.3	41,799	.99
Fresh meadow	32,211	40.7	23,611	.73
Salt marsh	0	0.0	0	0.0
Berkshire County:				
Total hay crop.....	39,275	100	33,999	.87
English upland	28,558	72.7	25,774	.90
Fresh meadow	10,717	27.3	8,225	.77
Salt marsh	0	0.0	0	0.0
Worcester County:				
Total hay crop.....	101,291	100	83,084	.82
English upland	47,680	47.1	39,748	.83
Fresh meadow	53,611	52.9	43,336	.81
Salt marsh	0	0.0	0	0.0
Middlesex County:				
Total hay crop.....	70,920	100	50,156	.71
English upland	30,737	43.3	21,061	.69
Fresh meadow	37,691	53.2	26,902	.71
Salt marsh	2,492	3.5	2,193	.88
Norfolk County:				
Total hay crop.....	41,369	100	24,238	.59
English upland	22,156	53.3	11,292	.51
Fresh meadow	16,613	40.2	11,007	.66
Salt marsh	2,700	6.5	1,939	.72
Essex County:				
Total hay crop.....	54,901	100	39,416	.72
English upland	22,826	41.6	14,584	.64
Fresh meadow	17,463	31.8	12,270	.70
Salt marsh	14,612	26.6	12,562	.86
Summary:				
Total hay crop.....	386,908	100	296,303	.77
English upland	198,798	51.4	154,258	.78
Fresh meadow	168,306	43.5	125,351	.70
Salt marsh	19,804	5.1	16,694	.84

NUMBER AND KINDS OF LIVESTOCK KEPT ON TYPICAL FARMS.

Neat cattle, horses, swine, and poultry were kept on all farms, and sheep, as well, on a great many. The equipment of livestock on typical farms in eastern Massachusetts appears to have been 1 or 2 horses, 1 or 2 yoke of oxen, 15 head of cattle, including 5 dairy cows, about as many swine as cows, and, on half the farms a flock of 10 to 20 sheep.¹⁵ In Bucks County, Pennsylvania,

¹⁵ Mass. Agric. Soc. *Papers* (1807), p. 35.

it was estimated (1791) that a farm of 200 acres would on the average support 12 head of cattle, including 5 milch cows, 20 store sheep, 10 hogs, and 10 dozen poultry.¹⁶

From the Chester County, Pennsylvania, tax lists for 1765, table 10 has been compiled, showing the number of horses, cattle, and sheep on the average farm.

TABLE 10.—*Livestock on farms,^a Chester County, Pennsylvania, 1765.*

[From tax lists in Pennsylvania Archives, 3d series, XI, 1-133.]

Total number of farms taxed...	3,293	Cattle:	
Average acreage	135	Total number reported.....	10,846
Horses:		Farms reporting	2,934
Total number reported.....	8,022	Per cent of all farms.....	89.1
Farms reporting	2,944	Average number of cattle re-	
Per cent of all farms.....	89.4	ported	3.7
Average number of horses re-		Sheep:	
ported	2.7	Total number reported.....	14,042
		Farms reporting	1,967
		Per cent of all farms... ..	59.7
		Average number of sheep re-	
		ported	7.1

^a According to the law of 1785 all horses and cattle over 3 years were taxable. Previous act (1762) does not state age of livestock to be taxed.

The Massachusetts valuation returns for 1771 for four towns in the Connecticut Valley give the following results.

TABLE 11.—*Livestock on farms in four towns in the Connecticut Valley.*

[From Massachusetts valuation returns, 1771, in Judd, *Hadley*, 385.]

Total number of farms taxed...	400 ^a	Cows, over 3 years.....	914
Horses, over 3 years.....	426	Average per farm.....	2.28
Average per farm.....	1.06	Sheep, over 1 year.....	2 388
Oxen, over 4 years.....	539	Average per farm.....	8.46
Average per farm.....	1.35	Swine over 1 year.....	601
		Average per farm.....	1.50

^a Estimated on basis of population and number of families.

The largest number of horses on any farm was 4, of oxen 6, of cows 9, and of sheep 40. In comparing the Pennsylvania figures with those for Massachusetts, the oxen and cows in table 11 should be added together, giving an average of 3.6 per farm or practically the same figure as for cattle in Pennsylvania. Figures for 215 farms in Falmouth, Maine, 1760, show on the average 1 horse per farm, 2 oxen, 3 or 4 cows, 9 or 10 sheep, and 1 or 2 swine over one year.¹⁷

There were a few regions in which the grazing industry had become specialized where livestock farming was carried on on a large scale. In the Narragansett country (Washington County, Rhode Island) about the middle of the eighteenth century we find farms ranging from several hundred to several thousand acres, supporting 20 to 40 horses, 25 to 50 dairy cows, and several hundred sheep each.¹⁸

¹⁶ Washington, *Letters on Agric.* (Knight ed.), 73.

¹⁷ MSS. in Mass. Archives, Boston, Mass.

¹⁸ Updike, *Narragansett Church*, I, 216.

In the back country of Pennsylvania the range system of cattle raising was pursued. The author of *American Husbandry* wrote:¹⁹

“Many of the planters, especially in the back parts of the province, where the wild tracts are adjoining, keep great stocks of cattle: some of them have from forty to sixty horses; and four or five hundred head of horned cattle, oxen, cows, bulls, calves, and young cattle; they let them run through the woods, not only in summer, but also in winter; which is a circumstance that makes them very inattentive to the providing winter food:”

THE CARE AND MANAGEMENT OF LIVESTOCK.

The eighteenth century farmers showed little advance over the first settlers in their care of livestock. The lack of adequate winter shelter and of a suitably balanced winter ration were still glaring faults. Combined with lack of selection in breeding, the result was small, semi-starved, ill-formed, and unproductive animals. Kalm²⁰ wrote (1748):

“All the cattle has been originally brought over from Europe. The natives have never had any, and at present few of them care to get any. But the cattle degenerates by degrees here, and becomes smaller. For the cows, horses, sheep, and hogs, are all larger in England, though those which are brought over are of that breed. But the first generation decreases a little, and the third and fourth is of the same size with the cattle already common here. The climate, the soil, and the food, altogether contribute their share toward producing this change.”

The exceptions to this general condemnation occurred in localities where production for a market was important. Just at the end of the century there was improvement by importation of cattle, sheep, and horses, but this episode belongs to the agricultural progress of the nineteenth century.

NEAT CATTLE.

Cattle were housed in New England and New York State during the winter months. Belknap²¹ reported:

“Cattle are housed from the beginning of November, By the beginning of May, the grass is sufficiently grown for cattle to live abroad; good husbandmen do not permit them to feed till the twenty-first of May; but scarcity of fodder obliges the poorer sort to depart from this rule.”

In southern New England the pasturage season was longer, and in towns along the Sound may have extended the year through.²² In Pennsylvania and New Jersey stables and cowhouses were seldom seen, and the cattle as a rule were left out all winter to pick up their living in the woods.²³ There were exceptions. Acrelius²⁴ wrote:

“A good housekeeper has a stable with thin sides for the horses, and sheds for the cattle and sheep built near the barn, and standing out in the stable-yard, so that they may be protected there when the weather is severe.”

Better care of livestock was one of the many features which distinguished the farming of the thrifty Germans from that of their English neighbors.

¹⁹ I, 166; see also Acrelius, in *Hist. Soc. Penn. Memoirs*, XI, 154.

²⁰ *Travels*, I, 102.

²¹ *New Hampshire*, III, 19.

²² Coffin, *Tour to Rhode Island*, in *Maine Hist. Soc. Collections*, 1st series, IV, 270.

²³ Kalm, *Travels*, II, 50; *American Husbandry*, I, 99, 132, 164.

²⁴ In *Hist. Soc. Penn. Memoirs*, XI, 155.

They kept less stock, but kept them better. The German barns, which will be described later were well known at the end of the eighteenth century. Rush²⁵ wrote:

"They keep their horses and cattle as warm as possible in winter, by which means they save a great deal of their hay and grain; for those animals when cold, eat much more than when they are in a more comfortable situation."

Hay remained the chief winter feed for cattle, but owing to the practice of sowing clover and timothy on uplands, it was better hay and there was more of it. In addition, cattle were given cornstalks and the straw of rye and other small grains. Potatoes and other root crops are occasionally mentioned as food for cattle, but seem to have been used to a very limited extent.²⁶ A distinction was already made between the food of stock which were being fattened and that of other animals. Bordley²⁷ wrote:

"In America we *keep* cattle through the winters, on straw, maize fodder, and husks, giving them water; and *fatten* on hay, and cut straw with meal; or as in Maryland, with maize fodder and broken ears of maize, in the *winter*: on grass in *summer*."

CATTLE RAISING AND BEEF FATTENING.

In general, the farmers did not specialize in any particular branch of livestock industry. Their cattle were not only dual but triple purpose animals. They furnished motive power for plowing and hauling, as well as meat and dairy products. Beef was "salted down," chiefly for home consumption, but in many localities a small amount could be marketed. The animals slaughtered were chiefly old cows and worn-out oxen weighing perhaps 400 to 500 pounds dressed.²⁸ However, in a few regions specialization had developed. In the back country of Pennsylvania and the uplands of Virginia and North Carolina range cattle were raised which were driven overland to the neighborhood of Philadelphia, where they were fattened for market. Tilton²⁹ described the stall-feeding industry in upper Delaware as follows:

"Some few farmers have the large English breed of cattle; but the most prevailing are of the smaller kind. These are bred in the greatest number on the marshes and forests of the two lower counties; from whence they are driven in large droves to the county of Newcastle, where the most cultivated meadows abound, and they are grazed and stall-fed for the markets of Wilmington and Philadelphia. Fattening cattle, during the warm weather, run at large in grazing grounds, changing them occasionally, from field to field; in the winter, such as are stall-fed are put each into a separate stall and fed with the most luxuriant hay. There is a prevailing opinion, that beef is firmer and in all respects better, when fatted upon grass than upon grain."

On the bog meadows and marshes of eastern New Jersey the farmers raised cattle for sale to graziers.

The hills of northern New England were well adapted to cattle raising, and droves from Vermont and New Hampshire were taken overland to New

²⁵ In Penn. German Soc. *Proceedings and Addresses*, XIX, 62.

²⁶ Allen, *Vermont*, in Vt. Hist. Soc. *Collections*, I, 484; Wheeler, *Brunswick, Maine*, 221; *American Husbandry*, I, 164.

²⁷ *Essays and Notes*, 159.

²⁸ Rev. Timothy Walker's *Diaries*, in N. H. Hist. Soc. *Collections*, IX, 139, 169.

²⁹ *American Museum*, V, 381.

York and to Boston, and occasionally to Philadelphia. In Hadley and neighboring Connecticut River towns the stall-feeding of oxen for the Boston market had begun as early as 1700.³⁰

The development of a large and strong race of cattle was the ambition of the New England graziers, because of their value as draft animals. Burnaby reported that the largest oxen in America were raised in Rhode Island, some of them weighing 1600 to 1800 pounds.³¹ Of more reliability are the records of a meat packer in Northampton, Massachusetts, about the year 1750, which showed the average dressed weight of 12 oxen to be 767 pounds.³²

DAIRYING.

Butter and cheese were made on all farms for home consumption and in some localities, especially in New England, for export as well. Owing to lack of careful methods, the butter was usually poor, and in the absence of refrigerating facilities had to be heavily salted. In northern Vermont the Scotch settlers were successfully producing a good grade of butter before 1800, which was sold in Boston.³³

Windham and Litchfield Counties in Connecticut and the Narragansett country in Rhode Island produced cheese in large quantities for export to the southern States and the West Indies. Of the town of Goshen, Connecticut, Dwight³⁴ wrote:

"It is, perhaps, the best grazing ground in the State: and the inhabitants are probably more wealthy, than any other collection of farmers in New-England, equally numerous. The quantity of cheese, made by them annually, is estimated at four hundred thousand pounds weight. Butter is also made in great quantities. The houses are good farmers' houses. There are a few in a superiour style. The inhabitants are distinguished for industry, sobriety, good order, and good morals."

On the extensive Rhode Island farms, dairying was a commercial industry by the middle of the eighteenth century. Douglass³⁵ wrote:

"The most considerable Farms are in the *Narragansett* Country. Their highest Dairy of one Farm *communibus annis* milks about 110 Cows, cuts about 200 Load of Hay, makes about 13,000 Wt. of Cheese, besides Butter; and sells off considerably in Calves and fatted Bullocks. A Farmer from 73 milch Cows in five Months made about 10,000 Wt. of Cheese; besides Cheese in a Season, one Cow yields one Firken of Butter, 70 to 80 Wt. In good Land they reckon after the rate of 2 Acres for a Milch Cow."

The scale on which the industry was conducted is shown by the following figures from Updike:³⁶ Farm A, 700 acres, 42 cows, annual product, 9,200 pounds of cheese; farm B, 350 acres, 36 cows, 8,000 pounds of cheese; farm C, 100 cows, 13,000 pounds of cheese. Tradition asserts that the recipe for

³⁰ Judd, *Hadley*, 368. On this subject see also Schoepf, *Travels*, I, 213; Strickland, *Observations*, 59, 61; Dwight, *Travels* (1821 ed.), II, 458; Belknap, *New Hampshire*, III, 143; Dean, *Atlas of Vermont*, 7; Smith, *New Jersey*, I, 487.

³¹ *Travels*, 123.

³² Quoted in Thompson, *History of Stock Raising*, ch. II, 40. (MS. in U. S. Dept. of Agriculture, Washington, D. C.)

³³ Miller and Wells, *Ryegate, Vermont*, 193.

³⁴ *Travels* (1821 ed.), II, 374.

³⁵ *British Settlements*, II, 100.

³⁶ *Narragansett Church*, I, 219.

Narragansett cheese was brought from Gloucestershire and was the same as that for the celebrated Cheshire cheese.

SHEEP.

Sheep became of steadily increasing importance in northern agriculture in the eighteenth century, particularly in New England. In general, that section was showing greater adaptation to grazing than to tillage, and within New England there were localities where sheep-raising was more profitable than other branches of the livestock industry. On the islands off the coast of southern New England and in Rhode Island, although the forage was sparse, the winters were not severe and besides the surrounding ocean saved the expense of inclosures and shepherding. In localities such as Martha's Vineyard, Nantucket, and in the Narragansett country where the flocks numbered several thousands,³⁷ wool became a commercial product, but in general, both in New England and in the Middle Colonies, sheep were raised as a part of the self-sufficient farm economy, and not as a business. They produced wool for the manufacture of homespun textiles and not for sale. Richard Peters wrote to Washington of sheep raising in Pennsylvania:

"It is a profitable article, so far as you can extend it, but no great capital can be employed in it; and, if the business was more extensively carried on, the profit would be reduced to nothing. Our long winters are inimical to sheep; they render the keeping expensive, and subject the animal to numberless disorders. We can have no succulent or green forage; turnips are out of the question; our snows and severe weather destroy or cover them; nor is their culture certain. I have tried the English sheep, which soon degenerate, and stand the climate but badly. As to fleece, it is but scant, three pounds per sheep being rather an over calculation. Wool is now in some demand, but I have known it unsaleable. . . . I know none who have tried the sheep business that have succeeded. Folding is very well, but it requires labour; and the sheep, crowded together here, have often perished. I cannot ascertain how many an acre will support; for none are kept, within my knowledge, but in small numbers, and as a variety in a farmer's stock. They are close feeders, and destroy pasture prodigiously."³⁸

Wool and not mutton was the object of sheep-raising. The meat could not be successfully preserved by salting or smoking, and consequently there was no export market. The farmers didn't like the taste of fresh lamb or mutton, probably because of their own negligence in slaughtering. The typical sheep of the period were small, long-legged, narrow in the breast and back, and also slow at arriving at maturity. They may have stood $2\frac{1}{2}$ feet high and weighed when dressed from 10 to 15 pounds per quarter, or in exceptional cases 20 pounds. They yielded on the average from 2 to 3 pounds of coarse, short-staple wool at a shearing.³⁹ Of the quality of American wool Burnaby⁴⁰ wrote:

"Upon the best inquiry I could make, I was not able to discover that any one had ever seen a staple of American wool longer than seven inches; whereas in the counties of Lincoln and Leicester, they are frequently twenty-two inches long."

³⁷ Wright, *Wool Growing and the Tariff*, 2.

³⁸ Washington, *Letters on Agriculture* (Knight ed.), 86.

³⁹ Tilton, in *American Museum*, V, 382; Strickland, *Observations*, 59; Mass. Agric. Soc. *Papers* 1807, p. 38. U. S. Dept. Agriculture, *Special Report on Sheep Industry* (1892), p. 74.

⁴⁰ *Travels*, 136.

Attempts to improve the breed of sheep by importation of rams from England were made as early as 1760 and, notwithstanding a drastic prohibition on the part of the English government, a small number were smuggled into the country.⁴¹

SWINE.

Every farmer raised swine and fattened 4 or 5 hogs, which supplied his family with salt pork, an essential article of their diet, and left a small surplus for sale. In New England a growing export trade in barreled pork was developing in the eighteenth century and large quantities were sold for the provisioning of the fishing fleets. Swine were fed on dairy and kitchen waste in the summer or allowed to run at large in the woods.

"As soon as the acorns, beech-nuts, &c. begin to fall, they are driven to the woods, in large herds, to feed on them. The delicacy, taste and nutrition of these nuts are particularly suited to the palate of these animals, so that in a short time they grow to a great size. The hog prefers the beech-nut to any other, and the effect of that preference is visible in growth and fat, hence a good beech nut year may be called a good swine year."⁴²

After harvest the swine were shut up and those which were to be slaughtered were fattened for a few weeks, principally on Indian corn, with the addition sometimes of potatoes or other root crops, peas, and beans. The usual practice was to slaughter hogs at 18 months, when they would weigh in the Middle Colonies and in most parts of New England about 200 pounds. In eastern Massachusetts the usual weight was given as from 250 to 400 pounds, but probably hogs of over 300 pounds were unusual. Some farmers kept their hogs over two winters, others slaughtered at 8, 10, or 12 months.⁴³

DRAFT ANIMALS—OXEN AND HORSES.

In New England the ox remained the chief reliance of the farmers as a working animal. Up to 1750 there were few sleighs or wheel vehicles light enough for horses to draw, and they were used chiefly for riding. In the latter half of the century the use of horses increased. For light tasks, such as cultivating corn and harrowing, they were used alone and for heavier work together with oxen, the horse often being the leader of the team. At the beginning of the nineteenth century oxen were still about 50 per cent more numerous than horses in eastern Massachusetts, but their declining importance is clearly evident from the figures given in table 12.

In Connecticut in 1796 there were 36,791 oxen 4 years old and upward and 37,907 horses 3 years old and upward, giving a ratio of 103 oxen to 100

⁴¹ *Loc. cit.* See also Eliot, *Field Husbandry*, 14. The law referred to is 8 Elizabeth, chapter 3 (1566). The penalty imposed by this act "for conveying any sheep alive out of this Realme" was, for the first offence the loss of the offender's entire estate, one year's imprisonment, and in addition the loss of his left hand. For a second offence the penalty was death.

⁴² Allen, in *Vt. Hist. Soc. Collections*, I, 483.

⁴³ Bordley, *Essays and Notes*, 186; Washington, *Letters on Agriculture* (Knight ed.), 74; Wheeler, *Brunswick, Maine*, 221; *Diaries of Rev. Timothy Walker*, in *N. H. Hist. Soc. Collections*, IX, 143, 169; Belknap, *New Hampshire*, III, 145; *American Husbandry*, I, 55; *Mass. Agric. Soc. Papers* (1807), p. 39.

horses. It is significant that horses outnumbered oxen in the three counties, where, on account of fertile soil and relatively easy access to markets, the beginnings of commercial agriculture were most evident. On Long Island both oxen and horses were used frequently in the same team. During the Revolution, when the British had commandeered horses and oxen, unspayed

TABLE 12.—*Horses and oxen in three counties in Massachusetts, 1767 and 1801.*
[From Massachusetts valuation returns.]

County.	Horses, 3 years old and over.		Oxen, 4 years old and over.		Ratio, oxen to 100 horses.	
	1767.	1801.	1767.	1801.	1767.	1801.
Middlesex	3,492	5,230	6,028	8,367	172	160
Norfolk	2,156	3,064	2,969	3,824	137	125
Essex	3,451	3,909	4,930	5,540	143	142
Summary	9,099	12,203	13,927	17,731	153	145

cows were used in the yoke, but only a few farmers continued this practice when the emergency had passed. In New York, New Jersey, and Pennsylvania the disappearance of oxen was taking place so rapidly after the Revolution as to occasion serious alarm to the "agricultural economists" of the day. A writer in the *American Museum* stated:

"Formerly it was the custom, in several of these states, to plough and harrow the lands, as well as convey their produce to market, by means of oxen. That frugal mode

TABLE 13.—*Horses and Oxen in Connecticut Counties, 1796.*
[From MS. tax lists in comptroller's office, Hartford, Connecticut.]

County.	Horses, 3 years old.	Oxen, 4 years and over.	Ratio: Oxen to 100 horses.
Hartford	5,878	5,816	98.9
New Haven	4,293	4,689	109.2
New London	4,152	4,448	107.1
Fairfield	6,300	6,255	99.3
Windham	4,493	4,686	104.3
Litchfield	7,570	6,656	87.9
Middlesex	1,943	3,016	155.2
Tolland	2,162	2,341	108.3
State total	36,791	37,907	103.0

of land carriage is at this time almost wholly discontinued; and such is the force of custom and prejudice, that I know many persons who would sooner carry their articles to market on their own shoulders, than be seen driving an ox team."⁴⁴

A few years later a correspondent from Burlington, New Jersey, summed up the case against horses as follows:

"The first cost and charges of maintaining horses upon a farm, cannot, upon the most moderate calculation, be computed at less than twice or three times the expense

⁴⁴ III (1788), p. 455.

attending a number of oxen, sufficient to perform the same labour. Horses are, from their nature, a more precarious property—subject to a greater variety of accidents and diseases; and, when past labour, occasion a heavy loss to the proprietors of them. On the contrary, a well-trained ox increases in value until he be nine or ten years old; and the profit from his labour in the mean time, amply repays the farmer every expense incurred in raising and training him to service: and when no longer capable of labour, instead of subjecting his owner to a heavy loss by death, he yields a handsome profit. If therefore an ox, when fatted for beef at ten years old, will produce a sum equal to the expense of maintaining him until that period, it follows, as an obvious truth, that all his labour is a clear profit to the farmer.”⁴⁵

THE NARRAGANSETT PACERS.

The breeding of horses seems to have been carried on rather generally. The export of horses to the West Indies from southern New England continued an important branch of trade until the Revolution, and horse raising was there a branch of the livestock industry of comparable importance with sheep and cattle raising. Mules were also raised for export in Windham and Worcester Counties. The small, hardy animals shipped from Connecticut ports and from New York often included Canadian horses which had been brought overland in the winter and fattened before export in the spring and summer.⁴⁶

The eighteenth century saw the development of two celebrated breeds of horses in the northern colonies, the Narragansett pacers of Rhode Island and the Conestoga horses of Pennsylvania. The pacers were of uncertain origin, by some they were said to have been imported from Andalusia, in Spain. They were a small hardy breed remarkable for their peculiar and comfortable gait and for their fleetness. MacSparran,⁴⁷ a Rhode Island clergyman, wrote: “I have seen some of them pace a Mile in little more than *two* Minutes, a good deal less than *three*.” After the Revolution, the pacers diminished rapidly in numbers, and by 1800 the breed was practically extinct. They had been exported rapidly to the West Indies, perhaps faster than they were raised. The pacers were used exclusively as saddle animals and never in harness, but improvement of roads and the increased demand for horses for teaming in the Revolution made the raising of trotting horses more profitable.⁴⁸

CONESTOGA HORSES.

The Conestoga horses, “the finest draft animals on the continent in the colonial age,” were developed by the German farmers of Pennsylvania from stock originally brought over by English settlers. The name was taken from

⁴⁵ American Museum, VIII (1790), 43. On the relative use of oxen and horses see Belknap, *New Hampshire*, III, 260; Judd, *Hadley*, 367; Gardiner, in N. Y. Hist. Soc. *Collections*, Publication fund series, II, 256; N. Y. Soc. for Promotion of Useful Arts *Transactions*, I (2d ed., 1801), 31; Franklin, *Writings*, VII, 434; Goodrich, *Statistical Account of Ridgefield, Connecticut*.

⁴⁶ Benedict Arnold was engaged in this trade. See Chastellux, *Travels*, 166 and note. Eliot, *Field Husbandry*, 16; *American Husbandry*, I, 58.

⁴⁷ In Updike, *Narragansett Church*, III, 36; Phillips, *Horse Raising in Colonial New England*, 291 et seq.

⁴⁸ Updike, *Narragansett Church*, III, 37, note; Douglass, *British Settlements*, II, 214; Phillips, *Horse Raising in Colonial New England*, 291 et seq.

a stream in Lancaster county, the site of a settlement of Swiss Mennonites. They were a strong, large, breed, whose excellence was a matter of frequent comment. Rush⁴⁹ wrote: "A German horse is known in every part of the state; indeed, he seems to 'feel with his lord, the pleasure and the pride' of his extraordinary size or fat."

Toward the end of the century there occurred two events of first class importance in the history of American horse-raising, the importation of the thoroughbred *Messenger* from England to Philadelphia in 1788 and the foaling of *Justin Morgan*, the sire of the Morgan breed, in West Springfield, Massachusetts, in 1793. The improvement of American stock which resulted belongs, however, to the next period of our history,

⁴⁹ In Penn. German Soc. *Proceedings and Addresses*, XIX, 60.

CHAPTER IX.—FARM MANAGEMENT AND HOUSEHOLD ECONOMY.

ECONOMIC CHARACTERISTICS OF COLONIAL AGRICULTURE.

Two economic characteristics stand out prominently in colonial agriculture: (1) its extensive character, that is, the thinness of the application of labor and capital on a large extent of land, and (2) its self-sufficiency, meaning by that term not complete isolation from commercial relations, but production, as a rule, for home consumption rather than for sale.

Contemporary observers had often remarked in the eighteenth century that farms were too large. General Warren's comparison¹ of English and American farming laid emphasis on the small amount of capital employed in this country, and as early as 1760 the author of the appendix to Eliot's *Field Husbandry*² had observed:

"I take leave to mention an Error, which, I think, many Husbandmen are guilty of; vis, in undertaking to open too large Tracts of Land at once for Improvement; by which Means the Expence of inclosing, of perhaps fifty Acres, amounts to a large Sum of Money and Quantity of Labour, which, a small Part of, expended on five Acres well cultivated, would yield a much larger Profit; for it is not the Quantity, but Quality of Land which must fill the Farmers Barn."

The farmers of Pennsylvania, too, were "land poor." The author of *American Husbandry*³ remarked:

"It is very evident that this must necessarily be the system while the settlers spend half their fortune in buying the land, that is, in paying the province fees for it: if a man has an hundred pounds in his pocket, and was able with it to cultivate properly forty or fifty acres; and he takes three or four hundred, which in patent fees costs him half his fortune, he then plainly lessens his ability to cultivate, while his cultivation ought to increase greatly."

SIZE OF FARMS.

The typical farm in New England in this period ranged from 100 to 200 acres, sometimes including as much as 300 acres in the newer sections and falling to 50 to 100 acres in more intensively cultivated areas.⁴ The conditions in Chester County were probably fairly typical of the older settlements in the Middle Colonies. There the tax returns⁵ for 1765 from 3,293 farms show an average size of 135 acres. Even within this county there was a considerable variation in farm acreage. In the five towns nearest Philadelphia 196 farms averaged only 114 acres each, whereas in five towns on the western

¹ Quoted on p. 85.

² P. 160.

³ I, 173.

⁴ Dickinson, *View of Massachusetts*, 7; Mass. Soc. for Promoting Agriculture, *Papers* (1807), p. 10.

⁵ *Chester County Tax Lists*, in *Pennsylvania Archives*, 3d series, XI, 1-137.

border of the county 460 farms had an average acreage of 156. On the frontier, where, as we have seen there was much land speculation, there were large holdings which, however, were generally not cultivated as farms. The actual farming on the frontier was, as a rule, on a small scale.⁶ In general, however, the larger farms were to be found in the back country and the smaller in the neighborhood of the coast towns.

An exception to this rule was the Narragansett country, now Washington County, Rhode Island, where in the first half of the eighteenth century livestock raising and dairy farming had been developed on a large scale. There the uncertainty of land titles, owing to the boundary dispute between Connecticut and Rhode Island, had prevented community settlement. A few individuals had secured extensive grants of land on which they grazed large herds of cattle and flocks of sheep. Although the average holding was possibly not over 300 acres, farms ranging from that figure to several thousands of acres were not uncommon.⁷

FARM LABOR.

The contention that colonial farms were too large was based not merely on the consideration of acreage but on acreage in relation to the available supply of farm labor and farm equipment. In the eighteenth century, as in the seventeenth, the northern farmer relied chiefly on his own labor and that of his family. The cooperation of several family groups, a relic of pioneer days, was frequent in harvesting, corn-husking, barn-raising, etc.

In New England only men as a rule were to be seen in the fields, the women of the family assisting only occasionally in harvest time. Women looked after the dairy, the poultry, and the kitchen garden. Among the German settlers in New York and Pennsylvania the women not infrequently worked in the fields along with their husbands or brothers. Dwight⁸ records his astonishment at first observing this phenomenon "near Hudson, New York."

"Immediately after I left Hudson's, I was presented with a prospect entirely novel to me. Ten women, of German extraction, were arranged in front of a little building, busily employed in dressing flax. In my childhood I had seen women, in a small number of instances, busied in the proper labour of men; particularly in raking hay immediately before a shower, when the pressing nature of the case demanded extraordinary exertions. Even this I had not seen for thirty years. Women in New England are employed only in and about the house, and in the proper business of the sex. I do not know, that I was ever more struck with the strangeness of any sight, than with the appearance, and business, of these German females."

In New England a farmer could occasionally employ a poorer neighbor whose small farm did not demand all his time. The Scotch-Irish immigration after 1720 increased the supply of labor, but as in the seventeenth century the easy accessibility of cheap new land drew away the landless men, both native and foreign, and prevented the formation of a regularly dependable group of farm laborers. Another circumstance which kept farm labor high

⁶ Ballagh, in *Am. Hist. Asso. Report* (1897), p. 113.

⁷ Channing, in *J. H. U. Studies in Hist. and Pol. Sci.*, IV (1886), No. 3; Updike, *Narragansett Church*, I, 215-217.

⁸ *Travels* (1821 ed.), III, 205. See also Rush, in *Penn. German Society, Proceedings and Addresses*, XIX, 66; Davis, *Bucks County, Pennsylvania*, 717.

in New England was the competition of the fisheries and shipping with agriculture.

THE REDEMPTIONERS.

In the Middle Colonies the larger influx of immigrants, English, Scotch-Irish, and Germans, produced the class of redemptioners, or indentured servants, who were used extensively as farm help. Kalm⁹ describes them as follows:

“These new-comers are very numerous every year: there are old and young ones, and of both sexes; some of them have fled from oppression, under which they supposed themselves to have laboured. Others have been driven from their country by persecution on account of religion; but most of them are poor, and have not money enough to pay their passage, which is between six and eight pounds sterling for each person; therefore they agree with the captain that they will suffer themselves to be sold for a few years, on their arrival. In that case the person who buys them, pays the freight for them, but frequently very old people come over, who cannot pay their passage, they therefore sell their children, so that they serve both for themselves and for their parents: there are likewise some who pay part of their passage, and they are sold only for a short time. From these circumstances it appears, that the price of the poor foreigners who come over to North America is not equal, and that some of them serve longer than others; when their time is expired, they get a new suit of clothes from their master, and some other things: he is likewise obliged to feed and clothe them during the years of their servitude. Many of the Germans who come hither, bring money enough with them to pay their passage, but rather suffer themselves to be sold, with a view that during their servitude they may get some knowledge of the language and quality of the country, and the like, that they may the better be able to consider what they shall do when they have got their liberty. Such servants are taken preferable to all others, because they are not so dear; for to buy a Negroe or black slave, requires too much money at once; and men or maids who get yearly wages, are likewise too dear; but this kind of servants may be got for half the money, and even for less; for they commonly pay fourteen pounds, Pennsylvania currency, for a person who is to serve four years, and so on in proportion. Their wages therefore are not above three pounds Pennsylvania currency per annum. This kind of servants, the English call *servings*. When a person has bought such a servant for a certain number of years, and has an intention to sell him again, he is at liberty to do so; but he is obliged, at the expiration of the term of the servitude to provide the usual suit of cloaths for the servant, unless he has made that part of the bargain with the purchaser. The English and Irish commonly sell themselves for four years, but the Germans frequently agree with the captain before they set out, to pay him a certain sum of money, for a certain number of persons; as soon as they arrive in America, they go about and try to get a man who will pay the passage for them. In return they give according to the circumstances one, or several of their children to serve a certain number of years, at last they make their bargain with the highest bidder.”

WAGES OF FARM LABOR.

Data on farm wages are of course fragmentary. The most complete figures available are those collected by Strickland,¹⁰ which have been summarized in table 14.

In New York 1 bushel a day was the payment for cradling wheat; in New England a bushel of maize was given for a day's work at harvest. In addition to these money wages, laborers received food and either cider or rum to

⁹ *Travels*, I, 388. The passage in *American Husbandry*, I, 169, appears to be merely a paraphrase of Kalm.

¹⁰ *Observations*, 28.

drink. Richard Peters wrote to Washington¹¹ in 1792 of wages around Philadelphia as follows:

"Our wages for hirelings, by the day, are commonly 2s. in winter, and 2s. 6d. nine months in the year, for common days-work on a farm, and every thing found, as to eating and drinking. The same man will hire, and find himself, at 3s. and 3s. 6d. per day; for a reaper 3s. to 3s. 9d. and found; and the same for cutting grass; reaping, by the acre, I have never had done under 5s. but the price is generally 7s. 6d. the labourers finding themselves. . . . As to mowing, or what we call cradling grain, we pay a man 5s. to 6s. per day, and found; and the days's work about the same with Mr. Young's statement, viz. two or two acres and a half per day. Mowing per acre 5s. to 6s. and a pint of rum. Labourers find themselves food. . . .

"The yearly hire of a good labourer in Pennsylvania I think sixty dollars, or 22*l.* 10s. currency, and found, clothing excepted."

Such wages were regarded as abnormally high by European observers. The author of *American Husbandry*¹² remarked that in buying labor "one shilling will do as much in England as half a crown in New England." Wages were high not only in money but in money's worth, and it was this

TABLE 14.—*Farm wages for agricultural labor.*

	New York.	New England.	New Jersey and Pennsylvania.
By the month:			
In summer ..	1s. 5d.	2s.	2s.
In winter ...	1s. 1d.	1s. 3d.	1s. 9½d.
By the day:	2s.	2s. 7d.	2s. 3d.
Foreman	£14 per year.	£18 15s. ...	£24

circumstance which made the acquisition of an independent position so easy. In Vermont, wrote Williams:¹³

"in agriculture, the laborer can procure seventy dollars a year for his work; equal in value to one hundred and twenty bushels of wheat. In the busy seasons of the year, the common price of a day's labor is half a dollar; in the winter not more than half this sum. All kinds of labor are in the usual proportion to that of agriculture. Of these wages it will take twenty dollars, to procure comfortable clothing; the remainder the laborer is able to reserve for other purposes. Thus by laboring for another for two or three years, the laborer becomes independent, and works afterwards upon his own land or stock."

SLAVES IN NEW ENGLAND.

It has long since been established by economic historians that the failure of northern farmers to utilize negro slaves as agricultural laborers rested upon economic and not on moral or religious grounds. Experiments with negro and Indian slave-labor were made in the first settlements. It became clear, however, that the slave system would not yield a profit where general agriculture was pursued simply for a living, or for a narrowly limited market. However, in one northern county, that unique region of large dairy and sheep farms, the Narragansett country in Rhode Island, the negro slave was an important figure. In the town of South Kingston, in 1730, from one-third

¹¹ Washington, *Letters on Agriculture* (Knight ed.), 84.

¹² I, 73.

¹³ *Vermont*, II, 367.

to one-half of the population were negroes and Indians. In 1774 there were 3,761 slaves in Rhode Island in a total population of about 60,000, but by 1790 the number had decreased to less than 1,000.¹⁴ It seems doubtful whether the blacks were essential to the successful conduct of large-scale agriculture in the Narragansett country. In the gay and luxurious life of the planters many house-servants were necessary, and it may be that most of the slaves were thus employed rather than as field hands.

LAND UTILIZATION.

From the scarcity of labor in comparison to the cheapness of land it resulted naturally that only small parts of the farms were actually in tillage and that the cultivation of these small patches of plowed land was superficial and negligent. The true explanation of the well-recognized facts of bad tillage was forcefully presented by Washington¹⁵ in a letter to Arthur Young. He wrote:

“An English farmer must entertain a contemptible opinion of our husbandry, or a horrid idea of our lands, when he shall be informed that not more than eight or ten bushels of wheat is the yield of an acre; but this low produce may be ascribed, and principally too, to a cause which I do not find touched by either of the gentlemen whose letters are sent to you, namely, that the aim of the farmers in this country, if they can be called farmers, is, not to make the most they can from the land, which is, or has been cheap, but the most of the labour, which is dear; the consequence of which has been, much ground has been *scratched* over and none cultivated or improved as it ought to have been: whereas a farmer in England, where land is dear, and labour cheap, finds it his interest to improve and cultivate highly, that he may reap large crops from a small quantity of ground.”

The small proportion of farm land under tillage in the older parts of New England is shown by the data in table 15, taken from the Massachusetts Valuation Returns¹⁶ of 1801:

TABLE 15.—Land utilization, six counties in Massachusetts, 1801.

[From Massachusetts valuation returns.]

County.	Total taxable.		Tillage.		English up-land mowing.		Fresh meadow and salt marsh.		Pasture. ^a		Woodland and waste. ^b	
	Acres.	P. ct.	Acres.	P. ct.	Acres.	P. ct.	Acres.	P. ct.	Acres.	P. ct.	Acres.	P. ct.
Hampshire ..	920,647	100	59,080	6.4	46,941	5.1	32,211	3.5	156,120	17.0	626,295	68.0
Berkshire ...	475,147	100	28,320	6.0	28,558	6.0	10,717	2.2	86,827	18.3	320,725	67.5
Worcester...	811,122	100	31,786	3.9	47,680	5.9	53,611	6.6	188,624	23.3	489,421	60.3
Middlesex...	433,766	100	27,507	6.3	30,737	7.1	40,183	9.3	112,555	25.9	222,784	51.4
Norfolk	217,800	100	9,618	4.4	22,056	10.1	19,312	8.9	56,640	26.0	110,174	50.6
Essex.....	241,133	100	14,416	6.0	22,826	9.5	32,075	13.3	106,590	44.2	65,226	27.0
Summary..	3,099,615	100	170,727	5.5	198,798	6.4	188,109	6.1	707,356	22.8	1,834,625	59.2

^a Includes “proprietor’s commons,” see p. 55.

^b Includes unimproved and unimprovable lands as well as town commons.

¹⁴ Updike, *Narragansett Church*, I, 201-209; Channing in J. H. U. *Studies in Hist. and Pol. Science*, IV (1886), No. 3, p. 10.

¹⁵ *Letters on Agriculture* (Knight ed.), 32.

¹⁶ MSS. in Mass. Archives, Boston, Mass.

It appears from the tables that in eastern Massachusetts a hundred acre farm would contain from 4 to 6 acres of land in crops and in addition 8 or 10 acres of upland grass land which was occasionally ploughed. About the same quantity of land was permanently in grass, i. e., in natural meadows.

TABLE 16.—*Land utilization, Connecticut, 1796.*

[From MS. tax lists in comptroller's office, Hartford, Connecticut.]

County.	All taxable land.		Tillage.		Upland mowing and clear pasture.		Meadow. ^b		Brush pasture. ^c		Uninclosed land.	
	Acres.	P. ct. of total.	Acres.	P. ct. of total.	Acres.	P. ct. of total.	Acres.	P. ct. of total.	Acres.	P. ct. of total.	Acres.	P. ct. of total.
Hartford	303,737	100	53,888	17.7	54,680	18.0	12,130	4.0	79,538	26.2	103,504	34.1
New Haven..	235,915	100	30,844	13.1	61,363	26.0	20,073	8.5	79,377	33.6	44,260	18.8
New London.	246,526	100	21,403	8.7	66,717	27.1	10,592	4.3	97,155	39.4	50,661	20.5
Fairfield.....	231,473	100	50,243	21.7	43,699	18.9	23,677	10.2	66,116	28.6	47,740	20.6
Windham....	288,886	100	25,139	8.8	55,630	19.3	24,285	4.4	84,732	29.3	99,101	34.3
Litchfield....	283,011	100	45,645	11.9	74,081	19.3	16,399	8.4	77,918	20.3	168,968	44.1
Middlesex ...	140,875	100	13,020	9.3	35,233	25.0	8,034	5.7	47,660	33.8	36,929	26.2
Tolland.....	158,247	100	14,010	8.9	34,196	21.6	7,277	4.6	47,354	29.9	55,412	35.0
Summary ^a ..	1,988,668	100	254,189	12.8	425,595	21.4	122,465	6.2	579,847	29.1	606,573	30.5

^a Including fractions of acres.^b Includes all other mowing land.^c Includes boggy meadow, not mowed.

The remainder of the farm, 70 or 80 acres, was divided between woodland and pasture in proportions determined largely by physiographic features. The distinction between pasture and woodland was probably not of great importance. Cattle and swine, as we know, were frequently turned loose to pick up their living in the woods. Moreover, as old fields were exhausted they were allowed to grow up to woods, being used meanwhile for pasture. This fact is clearly brought out in the distinction in the Connecticut tax lists between "clear pasture" and "brush pasture."

In Connecticut, table 16 shows unusually large proportions of plowing land in two counties: in Hartford, where there was much easily tilled sandy loam in the river valleys, and in Fairfield, where the accessibility of the New York and West India markets had encouraged vegetable-raising and flax-growing. In this State the percentage of land unimproved, i. e., woodland or semi-wooded, included about two-thirds the total acreage.

For the Middle Atlantic States we have not been able to obtain similarly detailed statistics. In general, it seems evident that on account of the greater importance of grain cultivation larger percentages of farm areas were devoted to tillage. In the fragmentary data which Washington gathered about 1790, in reply to Arthur Young's inquiries, we find a report from Bucks County, Pennsylvania,¹⁷ in which the figures of table 17 are given as typical of that region.

TABLE 17.

	Acres.	P. ct.
Total farm acreage.....	200	100
Acres in tillage.....	75	37.5
Acres in pasture.....	50	25.0
Acres in orchard, garden, etc.....	10	5.0
Acres in meadow.....	15	7.5
Acres in woodland.....	50	25.0

A report from Richard Peters¹⁸ giving average figures for four farms in his neighborhood, about 6 miles from Philadelphia, gave 76 per cent of the farm acreage in arable land and pasture, 9 per cent in meadow, and 15 per cent in woodland.

FARM IMPROVEMENTS—INCLOSURES.

The problem of fencing was primarily a labor problem. In the early settlements and for a considerable part of the eighteenth century the growing crops were guarded from livestock by the practice of pasturage in common under community herdsman. But as settlement became denser and the common fields were divided, fences became indispensable. In New England, tillage fields were usually inclosed either by post-and-rail fences or by stone walls. In piling up these monuments of back-breaking toil the farmers accomplished a double purpose, at the same time setting up a protection for their crops and ridding their fields of a hindrance to cultivation. In the Middle Colonies the distinctive form of inclosure was the worm fence, composed of rails of chestnut or oak. The worm fence was a labor-saving device, but its serpentine windings consumed extravagant quantities of timber, so that in the more thickly settled communities post-and-rail fences or privet hedges were substituted.¹⁹

FARM BUILDINGS.

The log huts of the first settlers disappeared from the older communities during the eighteenth century. In New England they were superseded first by the "low-framed" houses, wooden buildings of one story, measuring about 16 by 24 feet on the ground and containing from one to three rooms. A better class of houses, erected only by the more prosperous farmers, were of two stories in front, sloping down to one story in the rear. The main part of the house would measure, perhaps, 40 by 20 feet, and the rear ell, which was used for a kitchen, 20 by 20. Enormous chimneys of brick and stone extended through the house, furnishing flues for the open fireplaces, which were still the only means of heating and cooking. Such houses were solidly built, with frames of heavy oak timbers, some of them 18 inches in diameter. The sides had a double sheathing, rough boarding covered with

¹⁷ *Letters on Agriculture* (Knight ed.), 72.

¹⁸ *Ibid.*, 81.

¹⁹ Kalm, *Travels*, I, 91, 165, II, 53-56; *American Husbandry*, I, 74, 167; Dwight, *Travels* (1821 ed.), I, 305, 375.

thin lapped clapboards. The roofs were of long rent shingles fastened with wrought-iron nails.²⁰

The lean-to kitchen often connected with the barn by a long woodshed, where the huge piles of logs were stored for winter consumption. The barn proper was sometimes placed at right angles with the house and shed to afford a sheltered space for a barn-yard. It was built of heavy timber covered with wide pine boards. An open space in the center provided a driveway as well as a threshing-floor.

"On one side of the threshing floor of the barn were the stables for the horses and cattle and upon the other the great haymow. On the scaffold over the stables the 'horse hay' was garnered, and upon the 'little scaffold' over the far end of the barn floor were nicely piled the bound sheaves of wheat, rye or barley, the butts all placed outward so as to hinder the entrance of the mice. Over the great beams were scaffolds made of round poles and pieces of waste lumber, generally, in such condition as to make a first-class man trap. On this scaffold was heaped the crop of oats, all awaiting the thrashing by the hand flail, the use of which generally began about Thanksgiving time. Who, raised on a farm, does not remember the miseries of the boy who mowed away the hay, about the time the mow hole was filled and pitching over the great beams commenced. The hot hole of Calcutta was no comparison to it."²¹

FARM BUILDINGS OF GERMAN SETTLERS IN PENNSYLVANIA.

In the Middle Colonies farm buildings of brick and stone were more frequently seen than in New England. Among the German settlers of Pennsylvania farm buildings were particularly commodious and substantial. In the second generation they usually abandoned their log huts and moved into two-story stone houses. The latter had pitched roofs with cornices running across the gables and around the first story.

"Many of them were imposing structures, having arched cellars underneath, spacious hallways, with easy stairs, open fireplaces in most of the rooms, oak-paneled partitions, and windows hung in weights."²²

The German settlers used large close stoves for heating instead of fireplaces, thus economizing fuel and increasing comfort. The original barns and stables of rough logs were early replaced by stone structures in the German settlements; in other localities they persisted until the end of the eighteenth century. The so-called Swisser barns introduced by the Germans were soon adopted as models by the English and Scotch-Irish farmers and became a familiar feature of the landscape in southeastern Pennsylvania. Bordley²³ wrote:

"Farmers in Pennsylvania have a commendable spirit for building good barns, which are mostly of stone. On the ground floor are stalls in which their horses and oxen are fed with hay, cut-straw, and rye-meal; but not always their other beasts. Roots are seldom given to their live-stock, being too little thought of. The second floor with

²⁰ Nourse, *Harvard, Massachusetts*, 76-100; Davis, *Wallingford, Connecticut*, 406; Bouton, *Concord, New Hampshire*, 515.

²¹ Thompson, *Greenfield, Massachusetts*, II, 963. See also Walker, *House and Farm of the First Minister of Concord, New Hampshire*, 17.

²² Ellis and Evans, *Lancaster County, Pennsylvania*, 349.

²³ *Notes and Essays*, 134; see also Scot, *Geographical Description of Pennsylvania*, 24; Ellis and Evans, *Lancaster County, Pennsylvania*, 348; Buck, *Bucks County, Pennsylvania*, 55; Rush, in *Penn. German Society, Proceedings and Addresses*, XIX, 54, 62; Acrelius, in *Penn. Hist. Soc. Memoirs*, XI, 156; Kalm, *Travels*, I, 223, II, 105, 275, 285.

the roof, contains their sheaves of grain, which are thrashed on this floor. A part of their hay is also here stored. Loaded carts and waggons are driven in, on this second floor; with which the surface of the earth is there level; or else a bridge is built up to it, for supplying the want of height in the bank, the wall of one end of the house being built close to the bank of a hill cut down. For giving room to turn waggons within the house, it is built thirty-six to forty feet wide: and the length is given that may be requisite to the design or size of the farm. . . . There are not many instances of sheds tacked to their modern barns. Their mode of building, of late, does not well admit of them; and room is gained by all being under one roof, covering one or more stories, having deep sides or pitch. The roof is a costly part of buildings: but it costs no more to cover three or four stories than one.

"Their barns on the sides of hills (which they chiefly prefer) may be built three stories high, instead of the usual two stories. Cut down the hill perpendicularly seven or eight feet, and build up one end of the barn close to the bank. The other walls are to be quite free and *airy from bottom to top*. The ground story seven or eight feet high; the next thirteen feet—the third also thirteen feet; into which grain in the straw is pitched up, and there thrashed out."

TOOLS AND IMPLEMENTS.

Little if any improvement had been made in farm implements until the very close of the eighteenth century. The woodwork of the carts, ploughs, yokes, and other farm implements was usually made at home. The iron parts, plowshares, chains, axes, bill hooks, scythes, as well as blades of the hoes, and prongs of manure forks and pitchforks, were hammered out by the village blacksmiths. Shovels were made of wood with the edge shod with iron. In general, such tools were heavy, clumsy and ill-contrived for their purposes. The two-wheeled cart was still the chief means of summer transport on the farm, and the sled in winter. In Pennsylvania much teaming was done with heavy wagons, but in New England four-wheeled vehicles were practically unknown before the Revolution.²⁴

PLOWS.

For the important business of plowing the eighteenth century farmers were but poorly equipped. An implement extensively used was the Carey plow, which has been described as follows: ²⁵

"The land-side and the standard were made of wood, and it had a wooden mould-board, often roughly plated over with pieces of old saw-plate, tin, or sheet-iron. It had a clumsy wrought-iron share, while the handles were upright, held in place by two wooden pins. It took a strong man to hold it, and about double the strength of team now required to do the same amount of work. The 'bar-share plough,' sometimes called the 'bull plough,' was also used, a flat bar forming the land-side, with an immense clump of iron, shaped like half a lance-head, into the upper part of which a kind of colter was fastened, which served as a point. It had a wooden mould-board fitted to the iron-work in the most bungling manner. A sharp-pointed shovel, held with the reverse side up, and drawn forward with the point in the ground, would give an idea of its work. Then there was the 'shovel plough,' in very general use in the middle and southern colonies; a roughly-hewn stick was used for a beam, and into this another stick was framed, upon the end of which there was a piece of iron, shaped a little like a sharp-pointed shovel. The two rough handles were nailed or pinned to the sides of the beam."

²⁴ Judd, *Hadley*, 383; Schoepf, *Travels*, I, 305, II, 22; Nourse, *Harvard, Massachusetts*, 98; Watson in *Hist. Soc. Penn. Memoirs*, I, 307.

²⁵ Flint, in *Maine Board of Agric., 19th Annual Report* (1874), p. III.

The wooden plows were not heavy, but the friction was nevertheless excessive and the drawbar pull was correspondingly great. The iron plating was rough and uneven, and a still greater defect was poor design.

"The share and mould-board were so attached as to make too blunt a wedge. Its action was not uniform, and it was difficult to hold, requiring constant watchfulness and great strength to prevent it from being thrown out of the ground. To plough to any considerable depth it was necessary to have a man at the beam to bear down."²⁶

With such unwieldy instruments, two men or a man and a boy, using 2 or 3 horses or 4 or 6 oxen, could scratch over 1 or 2 acres a day. Lighter plows of the same general design as those already described were sometimes used for cultivating between the rows of Indian corn.²⁷ The experiments with improved forms of mold-boards and with cast-iron shares which were

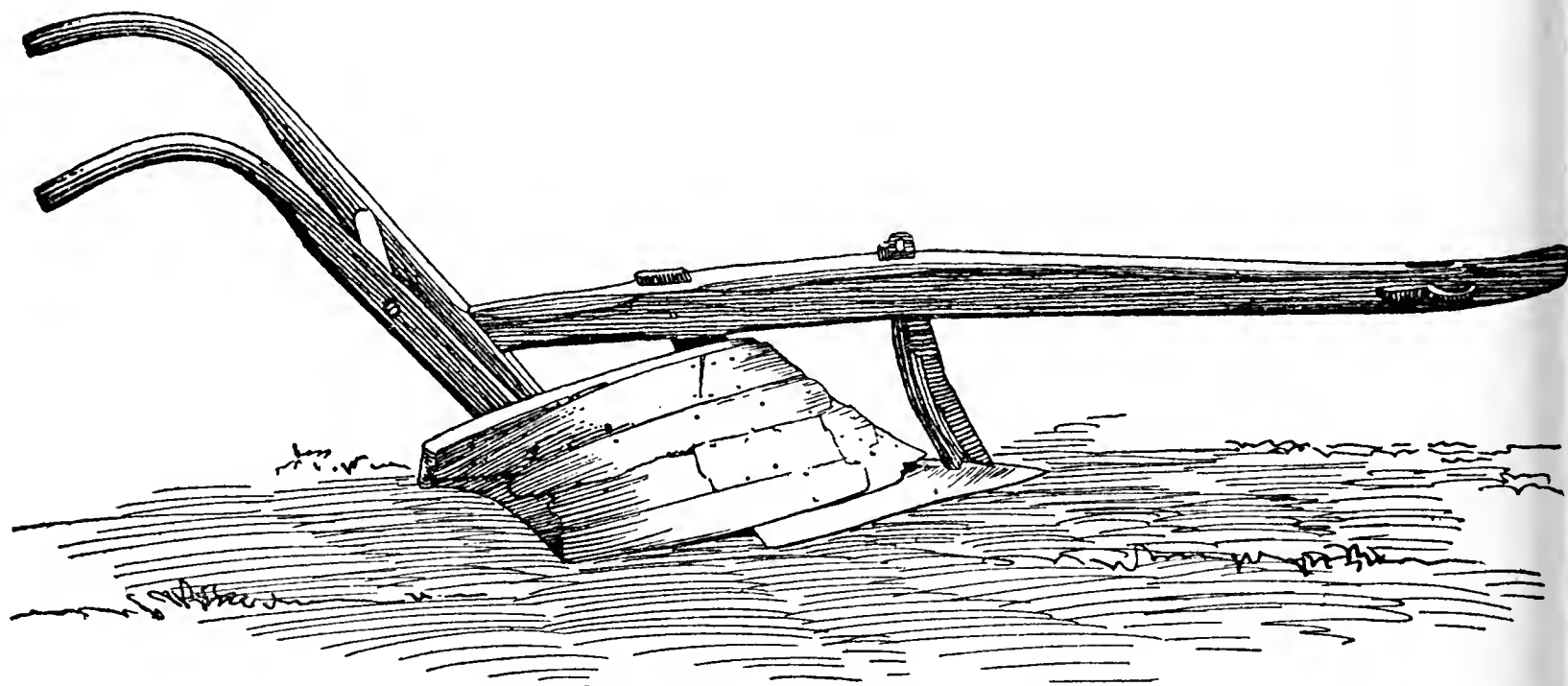


FIG. 3.—Colonial plow with wooden moldboard.

This plow, now preserved in the National Museum, Washington, D. C., was used by Henry Lamprey, who settled in Kensington, New Hampshire, in 1732. Note the strips of iron plating on the moldboard and the iron share and colter.

in progress at the very end of the century yielded tangible results in the early decades of the next century.²⁸

HARROWS.

Besides the plow, the harrow was practically the only implement to which animal power was applied. Harrows with wooden or iron teeth were used for pulverizing and leveling ploughed land, for covering seed, and for weeding between the rows of Indian corn. Acrelius²⁹ wrote:

"The harrow is three-cornered and heavy. The traces are fastened to it with a link, which makes a convenience in turning. A pair of horses before the harrow, and a

²⁶ Flint, in Maine Board of Agric., *19th Annual Report* (1874), pp. 111, 119.

²⁷ On plows and plowing see Chase, *Old Chester, N. H.*, 426; Acrelius, in Penn. Hist. Soc. *Memoirs*, XI, 147; Roberts, *Fertility*, 44; Deane, *New England Farmer* (2d ed., 1797), pp. 258-260.

²⁸ N. Y. Soc. for Promotion of Useful Arts, *Transactions*, I (2d ed., 1801), 173; Bordley, *Essays and Notes*, 471.

²⁹ Penn. Hist. Soc. *Memoirs*, XI, 148.

boy on the horse's back, smooths the field into fine and even pieces without any great trouble. Sometimes two harrows are fastened together after the same team."

In New England, according to Deane³⁰ two kinds of harrows were used, square and triangular, or "bifurcate," the former for old and clear grounds and the latter where stumps and other obstacles were numerous.

"The square harrow is armed with sixteen, or with twenty five tushes, or teeth. The sharper these teeth are, the more they will pulverize the soil. If they be steeled at the points, they will hold their sharpness the longer, and stir the ground more effectually. And the cost of doing it is so little, that it is surprising to see that it is so generally neglected by our farmers. . . .

"Some use harrows with wooden teeth, but they are of so little advantage to the land, unless it be merely for covering seeds, that they may be considered as unfit to be used at all. The treading of the cattle that draw them, will harden the soil more, perhaps, than these harrows will soften it."

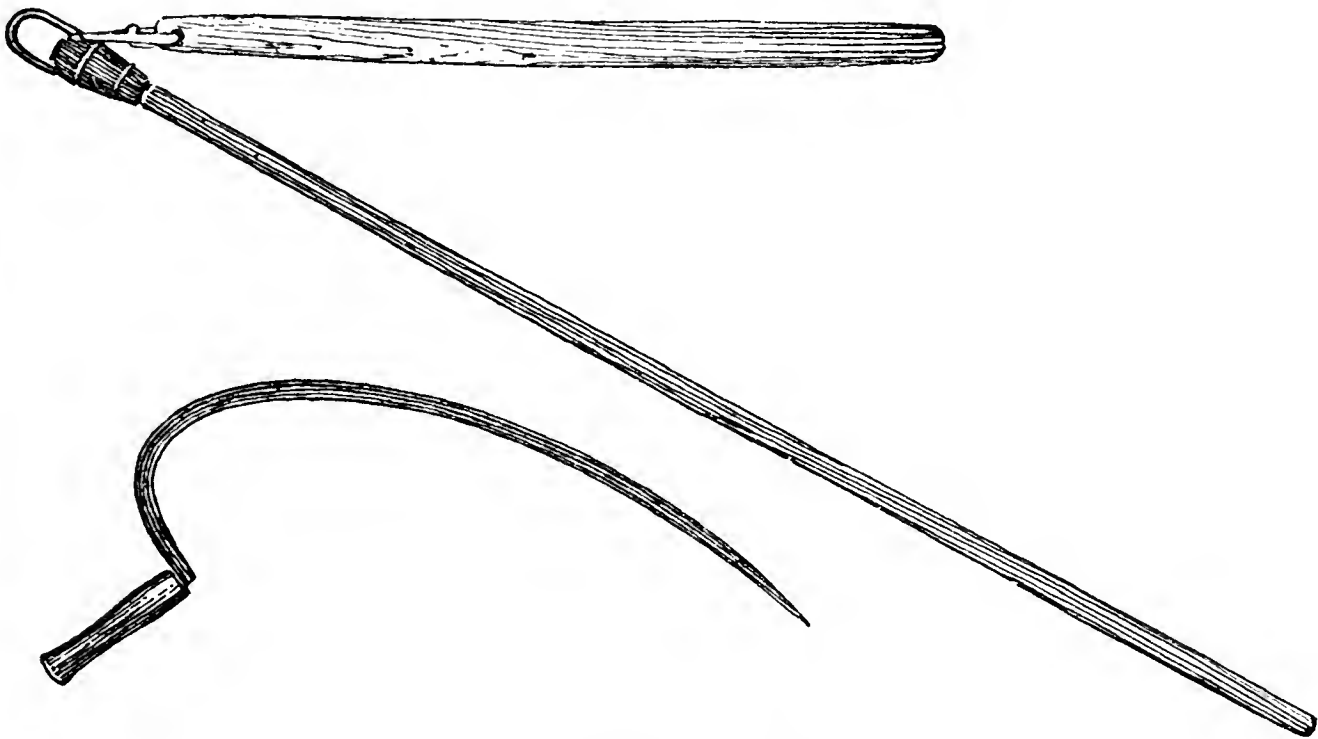


FIG. 4.—Flail and sickle.

HARVESTING, THRESHING AND CLEANING GRAIN.

The methods employed and the implements used in harvesting, threshing, and cleaning grain were but little advanced over those of the ancient Israelites. Wheat, and sometimes other small grains, was still reaped with a sickle. (See Fig. 4.) Grass and occasionally grain as well was cut with a scythe. An important innovation in the Middle Colonies in the latter part of the century which was not known in New England until after 1800, was the grain cradle.

"This consisted of a broad scythe, with a light frame of four wooden fingers attached corresponding in shape and nearly of the same length. With this the grain could be cut and at the same time gathered, and by a dexterous turn to the left the reaper could throw it in a swath, ready to be raked and bound into sheaves."³¹

With such primitive tools harvesting was a slow business. Richard Peters estimated that a reaper or mower would not average more than three-fourths

³⁰ *New England Farmer* (2d ed., 1797), p. 142.

³¹ Eby, in Ellis and Evans, *Lancaster County, Pennsylvania*, 349.

of an acre a day and in heavy grain or grass not more than half an acre. In cradling grain 2 or 2½ acres was considered a day's work.³² Tilton³³ wrote:

"A man can cut an acre of wheat with a sickle in a day; cradle four times as much oats or barley; and mow an acre of green grass with a naked scythe."

In New England grain was usually threshed with the flail; in the Middle Colonies the flail was used to some extent, but the more general practice was to tread out the grain with horses.

"They hauled their grain on sleds to the stacks, where a temporary threshing floor was erected. On these floors the grain was thrashed out by horses, which were driven in a circle, and after the heads were deemed to have been well cleared of the seed the straw was thrown to one side with forks and the grain swept up, ready for another lot of bundles to be unbound and submitted to a like process. In the barns, however, the thrashing was usually done with the flail, and on a still day the sound of the heavy thump of the oaken breaker on the floor, which acted like a drum, could be heard a long way off."³⁴

The threshing of barley with horses was an innovation in Rhode Island at the end of the century.

"When a barley heap is to be thrashed, previous care is taken to have it placed on a hard and level plat. A quantity of barley in the sheaf is then laid in a circular train to be trampled upon by horses. Sometimes three or four horses are ridden round upon the barley by boys; at other times a man stands in the centre of the circle, and with the reins in one hand, and a whip in the other, drives two or three pairs of young horses round upon the barley; whilst another person is employed with a rake to turn the barley, and expose it properly to the action of the horses' feet. When the grain of one layer is thus thoroughly beaten from the straw, the latter is raked into an heap without the circle, and the former into an heap within. Another layer of barley forms a new sheet for the horses, and the driver on the heap of grain recommences the operation of driving them round. This manner of thrashing has been practised in this town four or five years, and succeeds so well, as to render the flail almost useless. In this way the grain is both effectually separated from the straw, and separated more expeditiously and cheaply than by the method ordinarily used in Massachusetts. Two men and six horses will thrash an hundred bushels of barley in one day."³⁵

Winnowing was performed by throwing the grain against the wind and running it through sieves. In some places large willow winnowing-fans were used. Experiments with horsepower threshing machines had begun about 1780, but practicable development and introduction of such devices did not result until considerably later.³⁶

SELF-SUFFICIENT FARMING.

Self-sufficiency was a striking and important characteristic of the colonial farm. The farm family produced for themselves food, clothing, house furnishings, farm implements, in fact practically everything they needed.

"From his feet to his head the farmer stood in vestment produced on his own farm. The leather of his shoes came from the hides of his own cattle. The linen and woolen that he wore were products that he raised. The farmer's wife or daughter braided and sewed the straw hat on his head. His fur cap was made from the skin of a fox he shot. The feathers of wild fowl in the bed whereon he rested his weary frame by night,

³² In Washington's *Letters on Agriculture* (Knight ed.), 84.

³³ In *American Museum*, V, 380.

³⁴ Ashmead, *Delaware County, Pennsylvania*, 208.

³⁵ *Notes on Compton, R. I.* (1803), in Mass. Hist. Soc. Collections, 1st series, IX, 200.

³⁶ Bordley, *Essays and Notes*, 511.

were the results acquired in his shooting. The pillow-cases, sheets and blankets, the comfortables, quilts and counterpanes, the towels and table cloth, were home made. His harness and lines he cut from hides grown on his farm. Everything about his ox yoke except staple and ring he made. His whip, his ox gad, his flail, axe, hoe and fork-handle, were his own work. How little he bought, and how much he contrived to supply his wants by home manufacture would astonish this generation."³⁷

Under a system of mixed husbandry one would naturally expect the farm to produce its own food-supply, but the extent to which this rule was carried is surprising. Nourse³⁸ wrote:

"The ordinary food of the farmer's family, though abundant, was of the simplest, demanding the sauce of good appetite and sound digestive powers. Tables 'groaned,' but chiefly under the weight of 'bean porridge hot and bean porridge cold,' brown bread, hominy or hasty-pudding and milk, pork, salt beef boiled, salt and fresh fish, succotash and the commonest vegetables in their season. Molasses and honey sufficed for sweetening, sugar being costly, and rarely used except in sickness or in entertaining guests. The top shelf at the village store held a row of white cones wrapped in purple paper. One of these 'loaves,' weighing eight or ten pounds, was about a year's supply of sugar to the ordinary family. The paper wrap was carefully saved and utilized in the dyeing of yarn."

The beef and pork were supplied by the farm animals slaughtered, usually by the farmer himself, and dried, salted or pickled by the farm women. The latter also made butter, cheese, and lard. Bread was the product of the farmer's own grains, ground at the local grist mill and baked in his own ovens.

Not only the staples of diet, but many of the condiments which made it palatable, were supplied from the farm. The making of maple sugar and sirup was a part of the routine of inland farms, the sugaring-off time coming conveniently at the end of winter, when other outdoor operations were at a standstill. Honey was another substitute for cane sugar, bees being considered an important adjunct of every well-managed farm. Practically the only articles on the farmers' tables which were not "home made" were salt, molasses, rum, tea, and coffee. Salt was of course indispensable, and rum was a beverage rivaling cider in its popularity. Hence these two were important articles in internal trade. Tea, coffee and chocolate, being of recent introduction, were not generally used by farmers until after the Revolution. Toward the end of the century their use was rapidly increasing.³⁹

THE HOUSEHOLD TEXTILE INDUSTRY.

In the matter of clothing the colonial farm was quite as self-sufficient as in diet. The age of homespun is a title very appropriately applied to this period to indicate the importance of the domestic textiles in rural economy. Throughout the eighteenth century it is the practically unanimous testimony of official and unofficial sources that the country people were clad in materials of their own "manufacture."⁴⁰

³⁷ Hedges, in Suffolk County, N. Y., *Bicentennial*, 42.

³⁸ *Harvard, Massachusetts*, 100; see also Draper, *Spencer, Massachusetts*, 74; Tilton, in *American Museum*, V, 382; Hedges, in Suffolk County, N. Y., *Bicentennial*, 43.

³⁹ Felt, *Ipswich, Massachusetts*, 28; Acrelius, in Penn. Hist. Soc. *Memoirs*, XI, 158; Dwight, *Travels*, IV, 353 (1821 ed.); Mass. Hist. Soc. *Collections*, 1st series, III, 13.

⁴⁰ O'Callaghan, *Doc. Hist. of N. Y.*, I, 734; Connecticut Hist. Soc. *Collections*, V, 445; Acrelius, in Penn. Hist. Soc. *Memoirs*, XI, 157; Rush in Penn. German Soc. *Proceedings and Addresses*, XIX, 64; Morse, *American Geography*, 3d ed., 1792, p. 216.

The abundance and variety of homespun materials appears from Hamilton's description.⁴¹ He wrote in 1790:

"Great quantities of coarse cloths, coatings, serges, and flannels, linsey woolseys, hosiery of wool, cotton, and thread, coarse fustians, jeans, and muslins, checked and striped cotton and linen goods, bed ticks, coverlets and counterpanes, tow linens, coarse shirtings, sheetings, towelling and table linen, and various mixtures of woolen and cotton, and of cotton and flax, are made in the household way, and, in many instances, to an extent not only sufficient for the supply of the families in which they are made, but for sale, and even, in some cases, for exportation. It is computed in some districts that two-thirds, three-fourths, and even four-fifths of all the clothing of the inhabitants, are made by themselves."

If we could have examined the wardrobes of the farm men and women piece by piece, we should have found everything of household manufacture, except a few bits of Sunday finery, hard-earned and long-treasured, a broad-cloth coat, a beaver hat, shoe-buckles, a silk gown, or a few ribbons.⁴²

THE ORGANIZATION OF THE HOUSEHOLD INDUSTRIES.

The production in the household of woolen and linen, and to some extent also cotton fabrics, not only clothing but also the necessary house furnishings, such as sheeting, toweling, blankets, and table linen, and even such coarse fabrics as rag carpets and grain bags, was a well-organized industry. The various successive stages in the conversion of the raw materials into the finished product were regularly assigned to members of the family according to their strength and skill. Thus the men sheared and washed the wool, and performed most of the laborious processes of breaking, swingling, and hackling the flax to prepare the fiber for spinning. The carding of the wool, corresponding in a way to these processes, was for years the task assigned to the older members of the family whose strength and eyesight would have been unequal to more onerous or more careful work. About the year 1800, however, the household was relieved of this task by the introduction of the water-power carding machines, which, spread so rapidly that they were to be found in almost every village in 1810. The younger women of the family spun the fibers thus prepared into yarn and thread on the large and small wheels then found in every farmhouse. Bleaching and dyeing were also a part of the multifarious activities of these women. In the latter process almost all the materials used, such as pokeberries, madder, goldenrod, the bark of the hickory, butternut, and sassafras trees, and various flowers, could be found in the woods and fields. For producing the deep blue which was so popular, indigo must be imported, and this was one of the few standard commodities sold at the stores and by itinerant peddlers. Weaving on the ponderous and noisy handlooms was to some extent a specialized occupation performed by itinerant weavers.

On small looms the farm women made garters, points, glove-ties, hair-laces, stay-laces, shoe-strings, hat-bands, belts, and breeches-suspenders, often called "galluses." The production of these odds and ends of apparel shows

⁴¹ *Report on Manufactures*, in American State Papers, *Finance*, I, 132.

⁴² For a detailed account by a contemporary observer of the dress of the farm people in New England, see the letter of Governor Treadwell of Connecticut, in Noah Porter's *Historical Discourse*, 82.

in a striking manner the extent to which the household was self-sufficient in its supply of clothing. Knitting was an important branch of the domestic textile industry, producing the hosiery, mittens, shawls, comforters, etc., for all the family. It must be remembered that the foregoing discussion applies only to the conditions prevailing in inland towns. In the seaports and larger river towns the inhabitants had long used clothing and household furniture of foreign manufacture.

CONSTRUCTION AND FURNISHING OF FARMHOUSES.

In the construction and furnishing of their homes the inland farmers relied to a very limited extent on exchange with the world outside their immediate vicinity, and in fact supplied their wants, as in the matter of food and clothing, largely by the exertions of their own families. They utilized the timber growing in the vicinity, often on their own land, and employed as workmen those of their neighbors who carried on the carpenter's trade as a by-industry of farming. The task of raising the heavy beams which constituted the frame of the structure into position was accomplished by the united efforts of a large number of neighbors. Only a small amount of hardware was used, and most of this, such as bolts and hinges, was made by the local blacksmith. The nails, which were used much more sparingly than now, were often made by farmers themselves from nail rods purchased either from the local store or from a near-by slitting-mill. Glass, which had probably in all except the newest settlements replaced the wooden shutters and oiled paper of earlier times, was practically the only material brought from any distance. The furniture, such as bedsteads, chairs, settles, and tables, could easily be produced by the local cabinet-maker, or even by a skilful carpenter. Besides making the homespun sheets and blankets, quilts, and comforters, the women of the family made mattresses and pillows stuffed with the feathers of home-raised geese. In addition to their many other tasks they made candles and soap.

Inventories of table-ware and kitchen utensils bring to light only a few "boughten" articles, and these were carefully treasured and handed down from parents to children. Wood was the commonest material. It was used wherever possible; of it were made trenchers, drinking-cups, and tankards, and even spoons. Pewter also was used for these articles to some extent; but china, porcelain, glass, or silverware were rarely seen. In the kitchen, wooden and earthenware vessels predominated, pots of iron, brass, or copper being comparatively rare.⁴³

PURCHASES AND SALES.

To what extent the farmers in inland towns actually did purchase and sell commodities we can not at this distance accurately determine. Reasoning deductively from the facts presented above, we should conclude that trade of any kind was of small importance in rural communities. Fragmentary

⁴³ On domestic industries in colonial days, see Judd, *Hadley, Massachusetts*, 358, 359, 372, 378-380, 387; *Diary of Rev. Samuel Deane*, in *Smith and Deane's Journals*, 362; Nourse, *Harvard, Massachusetts*, 78; Bouton, *Concord, New Hampshire*, 524; Chase, *Old Chester, New Hampshire*, 416-424; Earle, *Home Life in Colonial Days*, chs. III and IV.

data confirm this conclusion. Occasionally an old account-book comes to light, furnishing a concrete illustration of the small amount of buying and selling which took place. Such an account book was kept by the Rev. Medad Rogers,⁴⁴ the minister of New Fairfield, Connecticut, a small town on the western boundary of the State. He had the use of a farm of 100 acres and in addition a salary of \$100, part of which was, as the accounts show, paid in kind. The accounts extend from 1784 to 1822, but the years in which they were most carefully kept are 1792 and 1793. In the 1 year and 9 months from February 14, 1792, to November 13, 1793, his total purchases amounted to £23, 10 shillings, and 11 pence. The items are as follows:

3 lbs. brown sugar.
10 lbs. iron.
1 iron pot.
1 iron skillet.
2 earthen basons.
2 chamber pots.
1 earthen jug.
1 small cream pot.
3 milk pans.
1½ yards satinet.
½ yard everlasting.
5 yards coating.

1 pair wool cards.
1 barlow penknife.
1 bbl. linseed oil and paints.
1 set pencilled tea dishes and saucers.
1 skein Holland thread.
½ bus. salt.
2 lbs. ginger.
1 lb. alum.
1 gal. rum.
1 gal. molasses.
7 smoaking pipes.
1 yard tobacco.

The entries of goods purchased in other years show the same predominance of necessary commodities which could not be produced on the farm. Chief among these were iron, of which in one year he bought 81 pounds, besides a bundle of nail rods, and salt, with occasional purchases of molasses and rum. Other entries show purchases of 50 bricks, a pork barrel, 6 cider barrels, a broadcloth coat, and a pair of shoes. The coat and the penciled tea-dishes were refinements of life which probably were considered necessary to the minister's social position and set him apart from the bulk of his parishioners.

The entries of sales are far less numerous. The chief items are dairy products, among them one sale of 451 pounds of cheese. It went to the local storekeeper and was to be paid for half in cash and half in merchandise. All the other sales were small, such as 2½ yards of tow cloth, 7 pounds of flax, 3 pounds of butter, a hind quarter of beef, and a barrel of cider.

THE FARMER A JACK OF ALL TRADES.

Besides taking his part in many of the harder tasks of the household industries, such as breaking, swingling, and hatcheling flax, the farmer applied himself more or less regularly to a diversity of other tasks according to his especial "bent" and opportunities. On the sea-coast, he was frequently a sailor or a fisherman for part of the year. In inland towns he often plied some trade or other and was classed as an artisan as well as a farmer. Every farmer did a multitude of odd jobs for himself, such as repairing old buildings, and building new, laying walls and stoning up wells, butchering pigs and cattle, making axe-handles and brooms, splitting staves and shingles, tanning leather, and cobbling shoes. Occasionally he performed some of these tasks

⁴⁴ Now preserved in the library of New Haven Historical Society, New Haven, Conn.

for a neighbor, who either had not the requisite skill or was too busy with strictly agricultural operations. Such service was more often repaid in kind than in currency.

Thus the Yankee farmer acquired his proverbial reputation for ingenuity and for a moderate ability in a variety of occupations. Chancellor Livingston⁴⁵ wrote:

“He can mend his plough, erect his walls, thrash his corn, handle his axe, his hoe, his sithe, his saw, break a colt, or drive a team, with equal address; being habituated from early life to rely on himself he acquires a skill in every branch of his profession, which is unknown in countries where labor is more divided.”

CAUSES OF HIS VERSATILITY.

The versatility of the northern farmers ought not to be credited to an exceptional endowment of inventive ingenuity. There seems no reason to believe that they were gifted with the “impulse to contrivance” in any higher degree than their kinsmen in the southern colonies. Versatility was the result of their persistent endeavors to adjust themselves to a particular aspect of their economic environment, namely, the lack of a market for farm produce. The problem that confronted the farmer was to get a living for himself and his family, and to get as good a living as he could with the least expenditure of labor. If he had been able to devote all his attention to raising some particular product, with the proceeds of whose sale he could have purchased the services of specialized artisans and goods from abroad, he undoubtedly would have preferred to do so. It would have tremendously increased his efficiency in production, and would have lightened the labors of all the members of his family. But the lack of a market was an insuperable obstacle to specialization, and consequently the family group was forced to rely upon itself and upon irregular exchange with other neighboring groups for the necessaries of existence, and to do without, in large measure, the comforts and luxuries.

⁴⁵ Art. *American Agriculture*, in *Edinburgh Encyclopædia* (1st Am. ed., 1832), I, 338.
Written about 1813.

CHAPTER X.—AGRICULTURAL TRADE.

THE LACK OF A HOME MARKET.

The lack of an industrial population in Colonial America meant that there was practically no home market for farm products. A small market was afforded by the consumption of the fishing and trading communities on the seacoast, concentrated chiefly in the cities of Boston, New York, Philadelphia, and Baltimore. Taken together, their population in 1800 was slightly over 150,000. In addition, there were, in the States north of Maryland, 17 towns of over 5,000 on tidewater or on the coast whose population totalled about 100,000. In the towns of the second group about one-half the inhabitants seem to have been engaged in agriculture.¹ By this computation, therefore, the market for foodstuffs in the commercial towns amounted to 200,000 persons, between 7 and 8 per cent of the total. Away from tidewater there were but few towns of more than 3,000 inhabitants. Lancaster, Pennsylvania, whose population was 4,292 in 1800, was usually spoken of at that time as "the largest inland town in the United States." There were of course a great number of small village communities, especially in New England, the largest of which contained from 50 to 100 houses grouped about the church, the tavern, and the country store. The village dwellers were for the most part farmers—producers and not merely consumers of foodstuffs. The tavern-keeper and the proprietor of the country store, the minister, the lawyers and doctors, the blacksmith, the owners of the village sawmills, grist mills and tanneries were regularly owners and operators of farms. They were the prototypes of the modern business and professional class, but their occupations were as yet not differentiated from the original and all-embracing occupation of farming. Only the broad outlines of a future separation of employments or "division of labor" had been marked out.

MANUFACTURERS NOT DIFFERENTIATED FROM AGRICULTURE.

The situation was well described by Tench Coxe² who wrote:

"Those of the tradesmen and manufacturers, who live in the country, generally reside on small lots and farms, from one acre to twenty; and not a few upon farms from twenty to one hundred and fifty acres; which they cultivate at leisure times, with their own hands, their wives, children, servants, and apprentices, and sometimes by hired labourers, or by letting out fields, for a part of the produce, to some neighbour, who has time

¹ See the author's *Rural Economy in New England*, in Connecticut Academy of Arts and Sciences *Transactions*, XX, 283.

² *View of the United States*, 442. See also Gardiner, in N. Y. Hist. Soc. *Collections*, Publication Fund Series, II, 255; Allen, *Vermont*, in Vt. Hist. Soc. *Collections*, I, 476. The subject of village industries is discussed in the author's *Rural Economy in New England*, in Connecticut Academy of Arts and Sciences, *Transactions*, XX, 251-276.

or farm hands not fully employed. *This union of manufactures and farming* is found to be very convenient on the grain farms; but it is still more convenient on the grazing and grass farms, where parts of almost every day, and a great part of every year, can be spared from the business of the farm, and employed in some mechanical, handycraft, or manufacturing business. These persons often make domestic and farming carriages, implements, and utensils, build houses and barns, tan leather, and manufacture hats, shoes, hosiery, cabinet-work, and other articles of clothing and furniture, to the great convenience and advantage of the neighbourhood."

Obviously this *union of agriculture and manufactures*, the practice of agriculture by all the members of the community, meant that the villages were not centers of consumption of farm products. They were, however, the points at which produce for export was collected through the medium of the country stores.

THE COUNTRY STORE.

In every village there were one or more country stores with a varied stock generally described as European and West India goods. Under the first head were included a few pieces of imported dress-goods, crockery, glassware, powder and shot, and bars of iron and steel. The West India goods were salt, molasses, rum and other liquors, indigo, spices, and sugar.

Practically all the transactions at the country stores were by barter, for "hard" money was scarce, and paper currency depreciated so rapidly as to be but a poor medium of exchange. The storekeeper took in exchange for his goods a great variety of farm products—butter, cheese, flaxseed, tow cloth, grain, provisions, potash, feathers, and beeswax. There was as yet little specialization in marketing functions, and so the storekeeper usually undertook on his own responsibility the resale of his miscellaneous purchases in the seaports, or if he lived on the coast or on a river, he might be himself a shipowner and exporter.³

THE EXPORT MARKETS.

The lack of a wide market for farm products was a fundamental characteristic of northern agriculture in the colonial period. For the tobacco of Maryland and Virginia and the rice, cotton, and indigo of the Carolinas and Georgia there was an insistent demand abroad. These were tropical or subtropical products, which could not be successfully grown in Europe. On the basis of the export trade, the large-scale agriculture of the South was developed with its plantation system and aristocratic social organization. But north of Maryland there were no great agricultural staples. The products of northern farms were the same as those of northern Europe. The wheat of Pennsylvania and New York and the beef and pork of New England could not compete, except in times of exceptional scarcity, in the European markets. In the West Indies the sugar plantations furnished a market of limited dimensions for northern products. The result was the continuance of small-scale, non-commercial farming and democratic social and political conditions throughout the North.

³ Bidwell, in Conn. Academy of Arts and Sciences, *Transactions*, XX, 258; see also Schoepf, *Travels*, I, 222; Miller and Wells, *Ryegate, Vermont*, 214; Kendall, *Travels*, III, 80; La Rochefoucauld, *Travels*, I, 424.

EXPORTS TO EUROPE.

The export of wheat from the Middle Colonies to the ports of southern Europe had begun before 1700 and continued irregularly throughout the eighteenth century. In the first half of the century the trade was regarded as a losing venture. In an official report of 1734 from New York we read:

"Wheat is the staple of this Province, and tho' that commodity seem literally to interfere with the product of Great Britain, It do's not so in fact, for its generally manufactur'd into flower and bread, and sent to supply the sugar Collonys, And whenever a Markett in Spain Portugal or other parts of Europe has encouraged the sending it thither in Grain, the Adventurers have often suffered by the undertaking, for at this remote distance, the intelligence of a demand reaches us so late, that the marketts are supplied before our Vessells come there, and even if it were otherwise our Merchants lye under vast and certain disadvantages besides for freight of Wheat from hence in time of warr was at least two shillings and six pence, and in time of peace is eighteen pence Sterling per bushell and by the length of the passage it often grows musty at least cannot come so fresh to Markett as from Great Britain; whence freights (as its said) are not above one quarter part of what they are at here."⁴

In the latter half of the century, European conditions favored increased exports of American grain. In Great Britain from 1765 to 1793 surpluses for export alternated with deficits and the necessity of import. From 1793 to 1820 the grain imports of Great Britain uniformly exceeded the exports.⁵

On the continent the wars of the French Revolution decreased the production of grain. A British official inquiry of 1780⁶ stated that "the quantity of grain raised in Europe, in common years, is not more than equal to the ordinary consumption of it's inhabitants; and that, in the event of a failure of their crops, *a supply can only be expected from America.*"

In 1793 the exports of American wheat reached almost 1,500,000 bushels, besides over 1,000,000 barrels of flour. The average annual exports for the decade 1791-1800, however, were only 426,000 bushels of wheat and 703,000 barrels of flour.⁷

Besides wheat and some corn, the most important agricultural export to Europe was flaxseed. Flaxseed was shipped from New York, Philadelphia, and New England ports, chiefly to Ireland. Kalm⁸ wrote in 1748 from New York:

"They send ships to *Ireland* every year, laden with all kinds of *West India* goods; but especially with linseed, which is reaped in this province. I have been assured, that in some years no less than ten ships have been sent to *Ireland*, laden with nothing but linseed; because it is said the flax in *Ireland* does not afford good seed. But probably the true reason is this: the people of *Ireland*, in order to have the better flax, make use of the plant before the seed is ripe, and therefore are obliged to send for foreign seed; and hence it becomes one of the chief articles in trade.

"At this time a bushel of linseed is sold for eight shillings of *New York* currency, or exactly a piece of eight."

In the years 1790 to 1794 the average annual exports of flaxseed were 241,000 bushels.

⁴ *N. Y. Documents Relative to Colonial History*, VI, 19.

⁵ Tooke, *High and Low Prices* (1st ed., 1823), pt. III, 180 et seq.

⁶ Quoted in Coxe, *View of the United States*, 147. See also Sheffield, *Commerce of the American States* (6th ed., 1784), 73; *Letters of Phineas Bond*, in *Am. Hist. Asso. Report* (1897), p. 523.

⁷ Pitkin, *Commerce of the United States* (1835 ed.), 96.

⁸ *Travels*, I, 255.

EXPORTS TO THE WEST INDIES.

Of greater importance than the European market was that afforded by the English, French, Spanish and other possessions in the Caribbean Sea, known as the West Indies. In these islands great profits to be obtained from sugar had led to specialized, large-scale agriculture utilizing the labor of negro slaves. The industry had prospered greatly during the eighteenth century, and the population of both blacks and whites had increased. However, at the end of the eighteenth century there were in the principal sugar-producing islands, those owned by England and France, not more than 1,000,000 negroes and less than 200,000 whites.⁹

There was no back country in the West Indies, no upland where the staples could not be raised and consequently no sharply defined region of general agriculture. Although a considerable proportion of the acreage of the plantations was utilized for grazing and the raising of provisions, food products were not nearly sufficient for the support of the population.

The principal exports from the North American colonies to the West Indies (both British and foreign) in 1770 are given in table 18.¹⁰ Of these

TABLE 18.—Exports from British North American Colonies to the West Indies, 1770.

Commodity.	Amount.	Commodity.	Amount.
Indian cornbus.	558,900	Lard and tallow . .lbs.	172,600
Flour and biscuit.bbbs.	230,600	Horses	6,000
Beef and pork . .bbbs.	28,200	Live oxen	3,300
Cheeselbs.	55,400	Sheep and hogs	18,500

exports a negligible fraction were from Canada and Nova Scotia. Most of the Indian corn was furnished not by the northern colonies, but by Virginia and North Carolina. The animals and animal products were mostly from New England.

During the Revolution, trade to the West Indies was of course interrupted. After independence had been won by the Colonies, Great Britain showed herself willing to adopt a liberal commercial policy as regarded imports of American goods into her own ports. But the commerce of the West Indies she determined to monopolize for herself and for her remaining possessions on the American continent. All United States vessels were excluded from the ports of the British West Indies, although American products might be imported in English vessels. The restrictions were in line with the ideals of the Mercantile System. It was hoped that Canada and Newfoundland might be able to feed the sugar colonies were the competition of the United States removed. The plan, however, did not prove practicable. Food shortages resulted which, according to Edwards,¹¹ were responsible for the death of thousands of slaves. No agreement could be reached relative to the West India trade in the treaties of 1794 or 1806. But the difficulty of supplying

⁹ Edwards, *British West Indies* (3d ed., 1801), II, 2; Morse, *American Gazetteer*, 1810.

¹⁰ From Sheffield, *Commerce of the American States* (6th ed., 1784), 135-154. The figures are averages for the years 1771-1773, or, in some cases, for 1768-1770.

¹¹ *British West Indies* (2d ed., 1794), II, 415.

TABLE 19.—*Markets for northern farm products.—Destination of exports of commodities produced in the northern colonies,^a 1770.*

[Source: Pitkin, Commerce of U. S., edition of 1816, pp. 21-23.]

	Great Britain and Ireland.	South of Europe.	West Indies.	Total exports. ^b
Wheat, bus.	161,724	588,561	955	851,240
Bread and flour, tons.....	3,846	18,501	23,449	45,868
Indian corn, bus.....	150	175,221	402,958	578,349
Meal, bus. ....	.....	.....	4,430	4,430
Peas and beans, bus.....	.....	1,046	49,337	50,383
Flaxseed, bus.	311,863	749	.....	312,612
Beef and pork.....	.....	^c 244	^d 2,870	.....
Butter and cheese, lbs.....	.....	.....	223,310	223,610
Horses .....	.....	.....	6,692	6,692
Sheep and hogs.....	.....	.....	12,797	12,797
Poultry, doz. ....	.....	.....	2,615	2,615

^a Includes exports from all the British continental colonies, including the islands of Newfoundland, Bahama, and Bermuda.^b Including exports to Africa.^c Barrels.^d Tons.TABLE 20.—*Agricultural exports, selected commodities, 1792.*

[From Coxe, View of United States, 413 et seq.]

	From New England.	From Middle States.	From Southern States.	Total ^a United States.	Average, 5 years. ^b
Cereal and cereal products:					
Wheat, bus.	599	316,492	536,699	853,790	1,028,792
Flour, bbls.	37,778	453,165	333,521	824,464	814,362
Bread, bbls.	8,283	47,407	25,296	80,986	80,413
Indian corn, bus.....	119,985	654,305	1,190,683	1,964,973	1,696,005
Indian meal, bbls.....	3,590	42,043	7,048	52,681	61,954
Oats, bus.	99,012	10,462	10,259	119,733	93,747
Peas and beans, bus.....	10,546	43,623	137,902	192,071	126,919
Flaxseed, casks ^c	11,582	34,837	5,962	52,381	48,244
Animals and animal products:					
Horned cattle	4,000	385	166	4,551	4,361
Horses	5,024	457	159	^a 5,656	5,540
Mules	1,091	10	.....	1,101	901
Sheep	10,941	732	480	12,153	10,846
Hogs	5,566	1,084	14,641	21,291	11,749
Poultry, doz.	5,173	969	1,174	7,316	6,552
Beef and pork, bbls.....	75,279	22,516	14,641	112,436	105,851
Hams and bacon, lbs.....	69,525	426,080	89,758	^a 585,353	530,326
Butter, firkins ^d	6,259	4,133	1,369	11,761	15,586
Cheese, lbs.	72,360	42,540	11,025	125,925	222,957
Lard, lbs.	216,964	186,620	111,661	515,245	603,909
Potatoes, bus.	12,187	6,289	1,158	19,634	^e 22,839
Onions, bus.	94,388	15,345	2,474	112,207	^f 293,223
Hay, tons	2,177	355	60	2,592	1,903
Potash, tons	2,966	4,834	23	7,823	7,214

^a The totals are given as found in Coxe, *View of the United States*. In some cases these totals do not agree with the sum for the groups of States.^b In the last column are given for comparison the average annual exports for the 5 years 1790-1794. Source: American State Papers, Commerce and Navigation, I, pp. 24, 103, 147, 267, 298, 301. (Supplement for 1793 included.)^c Cask=5 bus.^d Firkin=56 lbs.^e Barrel of potatoes=11 pecks.^f Four-year average, ropes and bushels.

the islands made it necessary for the British Government to open their ports to American vessels every year for certain limited periods.¹² France permitted her West India possessions to receive vegetables, rice, and maize from the United States, but prohibited other breadstuffs except in times of scarcity. So frequent did such occasions become toward the end of the century that the prohibition was suspended without interruption.¹³

Table 19 indicates the relative importance of the European and West Indian markets for northern agricultural products in 1770.

In Table 20 are presented the principal agricultural exports of the United States for the year 1791-1792, omitting such items as cotton, indigo, rice, and tobacco, which were grown for export exclusively in the South. The

TABLE 21.—Growth of exports of northern farm products, 1770-1790.

[Sources: For 1770; Pitkin, *Commerce of United States* (ed. 1816: also 2d ed., 1817), pp. 21-23; for 1790-94; American State Papers; *Commerce and Navigation*, I, 24 et seq.]

	1770.	Ave. of 5 years, 1790-94.
Wheat, bus.	851,240	1,028,792
Bread and flour, tons.....	45,868	.....
Flour, tons ^a .....	.....	71,257
Bread, bbls. ....	.....	80,413
Indian corn, bus.....	578,349	1,697,364
Flaxseed, bus.	312,612	241,240
Beef and pork, bbls. ^a	32,588	105,851
Butter and cheese, lbs.....	223,610	1,151,796
Cattle	3,184	4,361
Horses	6,692	5,540
Sheep and hogs.....	12,797	22,595
Poultry, doz.	2,615	6,552

^a The long ton was used in making these reductions.

extent to which the latter section competed with New England and the Middle States in the export of foodstuffs is noteworthy and is probably even more important than the table indicates, since much southern wheat was milled in Philadelphia, and Indian corn raised in Maryland and Virginia was exported from New England ports.

A comparison of the exports of the most important foodstuffs in 1770 with the figures for 1790 to 1794 shows significant increases in the twenty-year period. (See Table 21.)

INTERNAL TRADE.

The principal currents of internal trade in northern farm products were: (1) from the back country to the seaports, Baltimore, Philadelphia, New York, and the ports of New England, chiefly Boston; and (2) the coasting

¹² Pitkin, *Commerce of the United States* (1835 ed.), 178.

¹³ Jefferson's *Works* (ed. 1853), III, 510.

trade by which the maritime region of New England was supplied with bread-stuffs from the Middle and Southern Colonies, sending in return livestock salted meat, and dairy products.

TRADE OF PHILADELPHIA WITH THE BACK COUNTRY.

For the farms west of the Susquehanna River in Pennsylvania transportation was easier to the Baltimore market; nevertheless, Philadelphia drew trade from an extensive area. It had excellent facilities for communication with the interior by water and better land transportation than elsewhere in the colonies. It was the market for all of eastern Pennsylvania, the western counties of New Jersey, the northern counties of Delaware, and even for the newer settlements along the southern boundary of central New York State.

From the immediate neighborhood came firewood, vegetables, fat cattle, and dairy products for the consumption of city population (41,000 in 1800). The marketing was largely done by the farm women, who carried their produce, butter, poultry, fresh meat, etc., in large wallets or panniers slung across horses. Two-horse carts came into general use about the middle of the century.¹⁴

Overland transportation of farm products was confined to very short distances in most regions of colonial America on account of the poor condition of the roads. In southeastern Pennsylvania, however, the roads had been sufficiently improved so that wheat could be carted in wagons for distances of 50 or 60 miles. The German farmers in Lancaster, Lebanon, and York counties were noted for their heavy wagons and teams of Conestoga horses. Rush¹⁵ wrote:

“A large and strong waggon covered with linen cloth, is an essential part of the furniture of a German farm. In this waggon, drawn by four or five large horses of a peculiar breed; they convey to market over the roughest roads, between 2 or 3 thousand pounds weight of the produce of their farms. In the months of September and October, it is no uncommon thing, on the Lancaster and Reading roads, to meet in one day from fifty to an hundred of these waggons, on their way to Philadelphia, most of which belong to German farmers.”

Herds of cattle were driven overland for hundreds of miles to be fattened near Philadelphia, from the back country of Pennsylvania, from the uplands of the Southern States, and even from New England.

In the matter of water communication Philadelphia was exceptionally favored. At the time of the spring and fall freshets wheat and timber were floated down the Delaware River on flat boats to the city from points 100 to 150 miles distant in the back country. At Reading, on the Schuylkill River, wheat was collected in the winter in great quantities to be sent down to Philadelphia in the spring. The wheat and timber from the valleys of the Susquehanna and its tributaries went principally to Baltimore, but to some

¹⁴ Smith, *Wrightstown, Pennsylvania*, in Buck, *Bucks County*, 19; (Appendix) Davis, *Bucks County, Pennsylvania*, 713.

¹⁵ Penn. German Society, *Proceedings and Addresses*, XIX (1910), 67. See also Schoepf, *Travels*, I, 204, II, 22; Ellis and Evans, *Lancaster County, Pennsylvania*, 350; Weld, *Travels*, I, 93.

extent Philadelphia was the market for this region also, being reached by transshipment and land transportation across the peninsula between the rivers, a distance of about 20 miles.¹⁶

On account of its strategic geographical position in the center of the chief wheat-producing area, Philadelphia became early in the eighteenth century the most important center of the grain trade. By 1765 its superiority to New York was clearly shown in the quantity of flour, bread, and grain exported. In that year Philadelphia exported 367,522 bushels of wheat and 18,714 tons of flour and bread. New York's exports were only 109,666 bushels of wheat and 5,519 tons of flour and bread.¹⁷ The quality of the flour produced at the famous Brandywine mills was generally acknowledged to be better than that of New York, even in the latter city, and was regularly preferred in the West India market.¹⁸ The exports of flour from Philadelphia just before the Revolution averaged 268,000 barrels a year. By 1787 they had fallen to 202,000 barrels, but recovery was rapid, in 1789 the figure was 369,000 barrels and in 1792, 420,000 barrels.¹⁹

TRADE OF NEW YORK WITH THE BACK COUNTRY.

The back country tributary to the port of New York was less extensive than that which supplied the exports of Philadelphia and less productive as well. It was this circumstance which was largely responsible for the slower growth of the population on Manhattan. In 1786 the city had less than 25,000 inhabitants, but after that date there was rapid expansion, the census of 1800 reporting 60,000.²⁰ Land transportation to New York was less important than to Philadelphia, but by water its market was easy of access. The farmers of northeastern New Jersey drove cattle and shipped wheat and flour, corn, beef, and pork, flaxseed, potatoes, and firewood to New York, but those in the western counties traded with Philadelphia.²¹ From western Long Island came wheat, cattle, and provisions. Almost every town on the northern shore of Long Island Sound, as far east as Providence, had small sloops carrying grain, flour, beef, pork, potatoes, and firewood to New York. The following is a partial list of the commodities shipped from New Haven in 1801, which went almost wholly to New York: Cheese, 220,000 pounds; pork and beef hams, 24,000 pounds; pork, 1,900 barrels; beef, 1,700 barrels; butter, 800 firkins; lard, 600 firkins; corn meal, 1,000 hogsheads and 1,200 barrels; rye flour, 230 barrels; barley, 1,500 bushels; Indian corn, 300 bushels; rye, 200 bushels; oats, 530 bushels; beans, 280 bushels; potatoes, 160 bushels.²² New York did not control all the trade of

¹⁶ Cooper, *Information Respecting America*, 110; Schoepf, *Travels*, I, 47; Smith, *New Jersey*, I, 486; Scot, *Geographical Description of Pennsylvania*, 74.

¹⁷ *Virginia Gazette*, Apr. 9, 1767.

¹⁸ *N. Y. Documents Relative to Colonial History*, V, 57; N. Y. Soc. for Promotion of Useful Arts, *Transactions*, I (2d ed., 1801), 25. For a conflicting opinion see Strickland, *Observations*, 41. A contemporary description of the Brandywine mills is given by Tilton, in *American Museum*, V, 380.

¹⁹ Coxe, *View of United States*, 64; Proud, *Pennsylvania*, II, 271.

²⁰ Hardie, *Description of New York*, 151.

²¹ On the agricultural exports of New Jersey, see Kalm, *Travels*, I, 230; Smith, *New Jersey*, I, 488, 490, 492, 496, 497, 499.

²² Dwight, *Statistical Account of New Haven*, 67.

Connecticut. Many ports of that State shipped farm products directly to the West Indies.

The principal artery of communication between New York and the interior was of course the Hudson River. Down this stream came the grain and dairy products, potash, and timber from western New England and from a narrow strip of country west of the river in New York State, extending as far north as Albany.

Wheat was the most important commodity shipped down the Hudson. Even in the days of the Dutch occupation the wheat of Esopus was renowned. Farmers had begun to raise wheat in the Mohawk Valley soon after the Peace of Utrecht (1713) and their success had encouraged rapid settlement. By 1750 flour was being shipped from Sir William Johnson's colony at Amsterdam to the West Indies, and a few years later the country for 60 miles west of Schenectady was shipping wheat by sleighs in winter to that point for eventual transshipment to Albany and to New York.²³ By the end of the century Mohawk wheat had acquired a high reputation and was grown for export as far as 100 miles west of Albany.

Richard Smith²⁴ wrote in 1769 that there were at Albany "31 sloops . . . , which carry from 400 to 500 Barrels of Flour each, trading constantly from thence to York & that they make Eleven or 12 Trips a year each." The town of Catskill on the Hudson had prospered greatly after the Revolution through the rapid development of its trade by wagonroad with the back country of the Hudson Valley and of western Connecticut.

"Six hundred and twenty-four bushels of wheat were brought to the Catskill market in 1792. Forty-six thousand one hundred and sixty-four bushels came in 1800. On a single day in 1801 the merchants bought four thousand one hundred and eight bushels of wheat, and the same day eight hundred loaded sleighs came into the village by the western road."²⁵

A historian of the town wrote in 1803: "Between fifteen and sixteen hundred sleighs, containing chiefly wheat and potash, have been unloaded in the village in one day."²⁶ At this time there were 15 sloops owned in the town, 12 of which were engaged in carrying produce to New York, 2 to Boston, and 1 to the Southern States.²⁷

TRADE OF NEW ENGLAND PORTS.

The trade of Boston, the largest seaport of New England, with the back country was less than that of New York or Philadelphia. On this account the growth of Boston was relatively slow and in 1800 it had but 25,000 inhabitants. The shipment of New England farm products was not concentrated in a single port, but was carried on from a large number of points. The New Englanders were already famous for their maritime interests, good harbors

²³ *N. Y. Documents Relative to Colonial History*, VI, 207; Richard Smith, *Journal*, p. xlix; Strickland, *Observations*, 8.

²⁴ *Journal*, 9.

²⁵ From *Hampshire Gazette*, Apr. 1, 1801, quoted by McMaster, *United States*, II, 572.

²⁶ Rev. Clark Brown in *Mass. Hist. Soc. Collections*, 1st series, IX, 119.

²⁷ *Ibid.*, 118. On this subject see also Kalm, *Travels*, II, 246; Campbell, *Travels*, 283, 288; Richard Smith's *Journal*, 12, 76.

were abundant, and at all of them—Portsmouth, Newburyport, Salem, Boston, Barnstable, New Bedford, Providence, New London, New Haven, Fairfield—there were small crafts engaged in carrying beef and pork, butter and cheese, cider, hay, vegetables, and livestock to the West Indies and to the Southern States.

There were, therefore, a great many streams of trade trickling from the back country to the seaports in New England. Among them a few main currents may be distinguished. We have already mentioned the shipment of grain and dairy products from western New England down the Hudson River. Not all the trade of this region went south. From the neighborhood of Lake Champlain, pot and pearl ashes and beef were sent to Quebec in Canada and salt and rum were imported in exchange.²⁸ The Connecticut River furnished a cheap means of transportation throughout the middle of New England. Although originally navigable only as far as Enfield in Connecticut, 65 miles from the Sound, a series of canals constructed after 1790 had made possible the passage of small boats for 100 miles further north. Above Hartford only flat-bottomed crafts of 10 to 20 tons burden could be used. According to Dwight²⁹ a fleet of 14 boats made regular trips about the year 1800 between Hartford and the head of navigation in Vermont. They carried down potash and pearl ash, staves, shingles, grain, beef, flaxseed, and linseed oil, and took back rum, salt, molasses, dry goods, iron, and tea. Each round trip required 25 days and only 9 trips could be made in a season. At Hartford goods from up river had to be transhipped into small schooners and sloops, which, after collecting additional quantities of provisions and some vegetables from the towns on the lower river, sailed for New York or the West Indies.³⁰

THE BOSTON MARKET.

In eastern New England the Merrimac Valley was an artery of trade roughly parallel to the Connecticut River. The Merrimac was navigable only for 20 miles to Haverhill. But its valley provided a natural route for overland transportation. A great thoroughfare ran through it, affording an outlet for the products of northern and northwestern New Hampshire to the ports of Salem, Newburyport, and Boston. Over this route herds of fat cattle were driven to the Boston market. In winter sleds or pungs were used, square oblong wooden boxes on runners shod with iron. In these conveyances a great variety of produce was conveyed to the Boston market—boxes of cheese, barrels of apples, tubs of butter, winter squash, turkeys, chickens, eggs, and on top of all carcasses of slaughtered hogs.

“The teaming was of two kinds. There was a class of professional teamsters, who drove large wagons, drawn by four, six, or eight horses, serving the merchants of the up-country. . . . Wool, butter, cheese, and whatever sought the market would furnish the loads, while salt, molasses, dry goods, rum, and all the varieties kept by the miscellaneous ‘country store’ were taken on the return. Another class of teams probably more numerous, though smaller, was driven by farmers, who took a trip or two yearly

²⁸ *Belknap Papers*, in *Mass. Hist. Soc. Collections*, 5th series, II, 143; Graham, *Descriptive Sketch of Vermont*, 40.

²⁹ *Travels* (1821 ed.), IV, 155; see also Kendall, *Travels*, III, 218.

³⁰ Porter, *Historical Discourse*, 46.

to market, carrying their own produce, beef, pork, or whatever they had to sell, and returning with articles for home consumption or for the merchants."³¹

Another important overland route in the latter half of the eighteenth century ran between the Connecticut Valley towns, in central Massachusetts, and Boston. Cattle and hogs were driven over this route before 1750. Small quantities of goods were transported on horseback until about 1770, when sleighs first came into use. Later, wagons drawn by horses were used in more or less regular freighting to and from Boston. Grain, pork and potash were carried eastward in quantities of a ton at a load. The return cargo was largely rum.³²

THE COASTING TRADE.

The thirteen colonies along the Atlantic seaboard had become sufficiently differentiated economically in the eighteenth century to be separated into three groups: (1) New England, (2) the Middle Colonies, and (3) the Southern Colonies. The first group was distinguished by the prominence of maritime pursuits and, in agriculture, by the importance of the grazing industry. In Pennsylvania, New York, and New Jersey agriculture was relatively more important than in New England and commerce and fishing less so. Grain production for export was a distinguishing feature of farming in the Middle Colonies. The southern colonies were predominantly agricultural in their interests. Virginia and Maryland produced both grain and tobacco for export, the upland country raised cattle, and finally on the coastal plains of Georgia and the Carolinas were found rice, indigo, and cotton plantations. It was the specialization thus broadly outlined which was the basis of the exchange of commodities between the colonies.

DEPENDENCE OF NEW ENGLAND ON FOODSTUFFS FROM THE SOUTHERN AND MIDDLE COLONIES.

During the first half of the eighteenth century the commercial population of New England became regularly dependent on the Southern and Middle Colonies for breadstuffs. Grain was still shipped from Connecticut and western Massachusetts to Boston in the first half of the century, but such supplies were unreliable and Boston by 1750 was regularly importing breadstuffs from New York, Philadelphia, and Baltimore. By the end of the century flour was being imported even into the former grain-exporting region of the Connecticut Valley.³³

The provision of an adequate supply of grain for the city of Boston was considered so important that a public granary was established in 1728, and for more than 50 years a committee of selectmen was appointed each year to purchase grain, superintend the granary, and regulate the sale of grain from the public stock. By 1784 private importation had become sufficiently reliable and the municipal undertaking was abandoned.³⁴

³¹ Hazen, *Billerica (Mass.)*, 274. See also Greene, *Groton Historical Series*, 1st series, I, 5; Bouton, *Concord, N. H.*, 536.

³² Judd, *Hadley, Massachusetts*, 371, 382, 384; Carpenter and Morehouse, *Amherst, Massachusetts*, 75.

³³ Judd, *Hadley*, 354.

³⁴ *Boston Town Records*, VIII, 99, 101, 110; XI, 233; XII, 270. For this reference the author is indebted to Dr. O. C. Stine.

There were of course differences of opinion in New England regarding the advantages of the importations of foodstuffs, and voices of protest were not wanting. We read in an anonymous pamphlet of 1750:

"We supply ourselves from other Governments, in a great Measure with provisions of various sorts, which Strangers tell us, is a Shame for us to do; and we ourselves ought to think it a Shame; for we have many different Soils, as well adapted to those Necessaries of Life as our Neighbors. Corn, Rye, Barley and Oats we are sure, from our own Experience, are quite easy to be raised among us; and I believe, were we as industrious as some other Nations, we should raise enough not only for our own Consumption, but also for Exportation, if required; but instead of so doing, we pay large Sums for those Commodities to some of our neighboring Provinces."³⁵

Governor Hutchinson, on the other hand, had already perceived the sound economic basis of food imports. He wrote:³⁶

"It seems agreed that the southern colonies as far as Virginia are designed by nature for grain countries. It behoves us therefore, either like the Dutch for the other nations in Europe, to become carriers for them with our shipping, or to contrive some articles of produce or manufacture for barter or exchange with them, rather than in vain to attempt raising to more advantage than they do, what nature has peculiarly formed them for."

The fishing and lumbering population of the coast of Maine were to a large extent dependent on the import of breadstuffs from the Middle Colonies throughout the eighteenth century. Owing to the imperfections of the marketing organization of those days, supplies were not always regularly forthcoming and periods of scarcity and famine were not infrequent. The condition of a coast town at such a time is described in the memorial presented by the inhabitants of Kittery, 1751, to the Massachusetts legislature:³⁷

"In the whole town there are about Two Hundred and Eighty Four families or house-holders, and one quarter part of them Cannot raise one bushel of Corn, or any Sort of Grain in a Year, nor are they able to raise a Supply of any Sort of Provisions, but Depend upon others for their Supply. Not one in ten through the whole Town does raise a full Sufficiency for their own familys to live on the year about. Not one in thirty that Can raise any Provisions to spare So that the Town in General Depend upon buying, but have nothing to Purchase withall, as the times now are, but what they go and work for in other Towns and places."

The interruption of food supplies during the Revolution caused great distress on the Maine coast.³⁸

New England paid for her imports of breadstuffs partly by the services of her coasting vessels, in carrying the commerce of other colonies, and partly with her own farm products. Fatted cattle were driven to the New York market and occasionally to Philadelphia. Wool, hops, and barley were sent to that city or to New York. To Georgia and the Carolinas were shipped beef, pork, livestock, dairy products, apples, hay, and in fact much the same products that went to the West Indies. The rice, indigo, and cotton plantations of the southern coastal plains were comparable in many respects to the sugar

³⁵ *Some Observations Relating to Massachusetts Bay*, 15.

³⁶ *Massachusetts Bay*, II, 442.

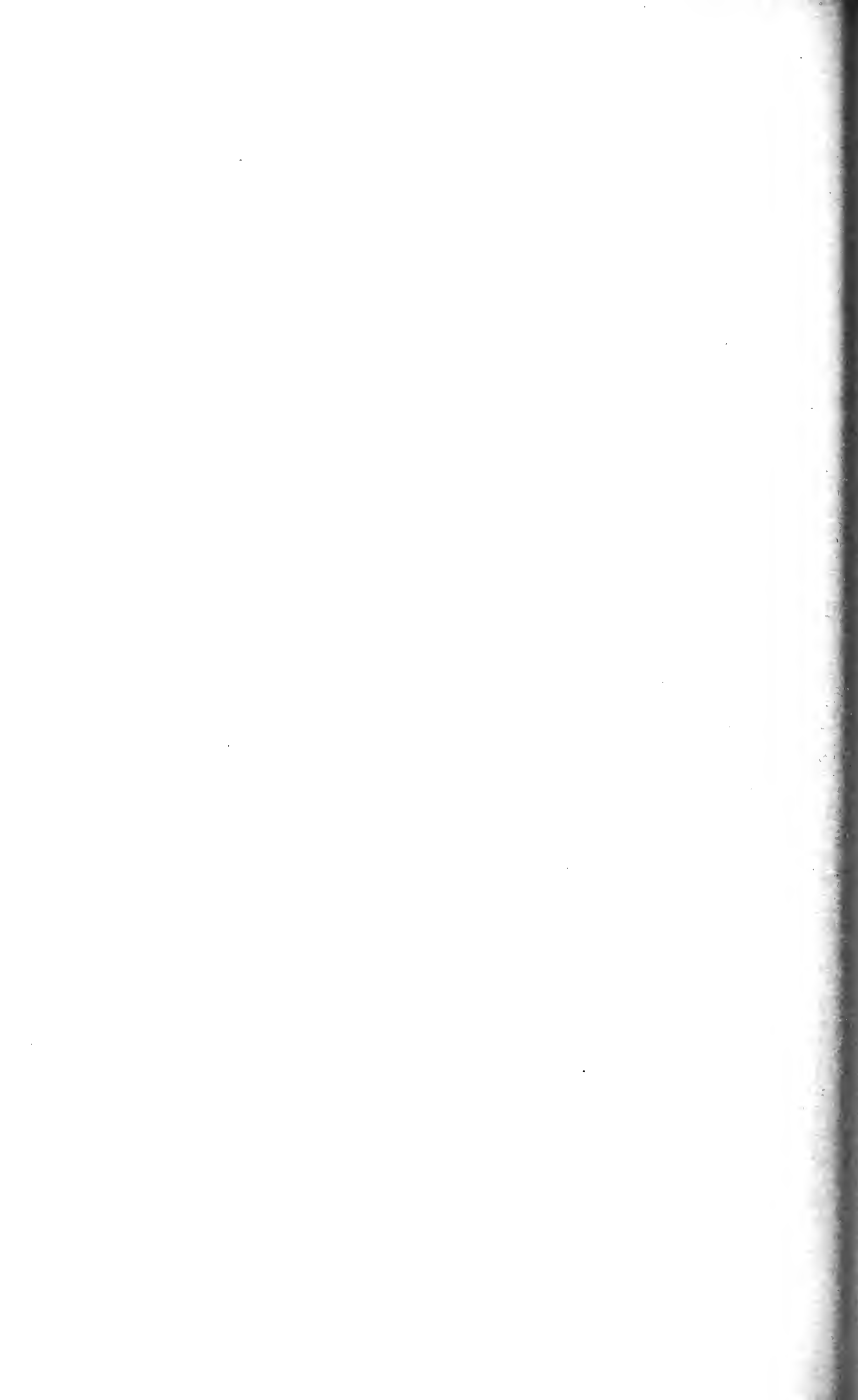
³⁷ In *Maine Hist. Soc. Collections*, 1st series, IV, 200.

³⁸ North, *Augusta, Maine*, 153. On conditions in Maine in the eighteenth century see Rev. Thomas Smith's *Journal*, in *Smith and Deane's Journals*; Sullivan, *Maine*, 6, 43; Lincoln's *Observations on the Climate, Soil, etc., of the District of Maine*, in *Mass. Hist. Soc. Collections*, 1st series, IV, 146.

plantations. They found specialization in their "cash" crops so profitable that it seemed as if they could not afford to raise their own food supplies. Although the plantations occupied but a small area of the farming land in these colonies, an intervening strip of pine barrens cut them off from the region of general farming in the back country. The products of the Middle Colonies and of New England which were marketed in the Georgia and Carolina lowlands included grain from New York and Pennsylvania, cheese and butter, dried fish, salted beef, apples, potatoes, hay and cider from New England, and in addition various products of the household industries, such as tow cloth for negro garments, and woodenware.³⁹

³⁹ Belknap, *New Hampshire*, III, 218; Bond, *Letters in Am. Hist. Asso. Report* (1897), p. 560.

PART III
EXPANSION AND PROGRESS 1800-1840



CHAPTER XI.—PIONEERING WEST OF THE ALLEGHENIES.

WESTWARD MOVEMENT OF POPULATION AND OF AGRICULTURE.

The settlement of the Ohio and Mississippi Valleys in the early decades of the nineteenth century was one of the great colonizing movements of modern times, great both in the numbers of men who participated and in its significance in our political and economic history. Viewed broadly, the movement of our population across the Alleghenies was but a phase in that continuous process of pioneering in which we had been engaged for almost two centuries. There was little new in the motives for this newest drift to the frontier. The desire to exchange exhausted farms for cheap, fertile land and the craving for the excitement and romance of a new life in a new country were as powerful in the nineteenth century as they had been in the seventeenth and eighteenth. This is not the place to repeat in detail the story of the occupation of the western country which had been so well told elsewhere.¹ It may be helpful, however, to point out here some of the more important stages in the great migration and to indicate a few of the circumstances which affected it.

Before the Revolution the territory west of the Alleghenies was practically uninhabited, save for the wandering Indian tribes and a few scattered outposts of French colonists. Hunters and trappers had spied out the country, and lured by their glowing accounts adventurous Virginia backwoodsmen had founded settlements in Kentucky. Figure 5 shows the extent of settlement in 1790, the date of the first census. In general, the line of the frontier was still fixed by the Allegheny mountains. In New York State a tongue of settlement, following the Mohawk Valley in a broad gap between the Adirondacks and the Catskills, had reached beyond the center of the State, occupying the whole of the Mohawk Valley and the country surrounding the interior lakes. In Pennsylvania the general line of settlement was the southeastern edge of the Allegheny plateau, but it had extended considerably beyond this in the southwestern portion of the State, reaching as far as the junction of the Allegheny and Monongahela Rivers at Pittsburg. North of the Ohio River the land was unoccupied save for the single settlement at Marietta (1788) and the French outposts on the Illinois and Mississippi Rivers.

By 1800, settlement in New York had advanced up the Mohawk and, widening its path, extended from the southern border of the state to Lake Ontario. Northern Pennsylvania west of the Susquehanna was still uninhabited. But in the south the settlements around Pittsburg, becoming increas-

¹ Roosevelt, *Winning of the West*, tells of the passing of the southern half of the frontier across the Alleghenies before the Revolution. Turner, *The Frontier in American History*, ch. IV, and *The Rise of the New West*, gives the best account of the westward movement, 1790 to 1840.

ingly dense, had spilled over into Ohio, and along the western border a tongue of settlement extended up to Lake Erie.

“By the opening of the nineteenth century, when Napoleon’s cession brought to the United States the vast spaces of the Louisiana Purchase beyond the Mississippi, the pioneers had hardly more than entered the outskirts of the forest along the Ohio and Lake Erie. But by 1810 the government had extinguished the Indian title to the unsecured portions of the Western Reserve, and to great tracts of Indiana, along the Ohio and up the Wabash Valley; thus protecting the Ohio highway from the Indians, and

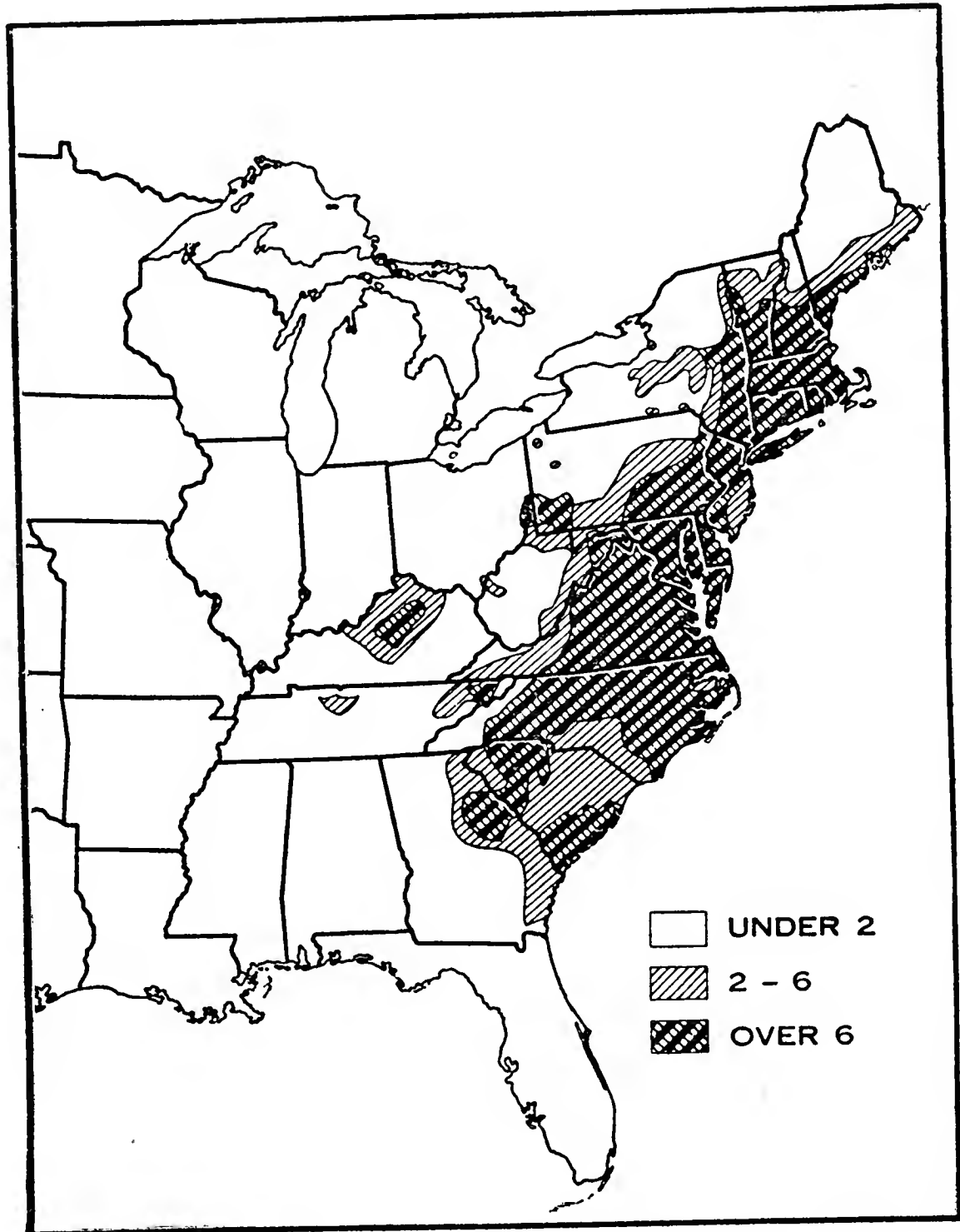


FIG. 5.—Population per square mile, 1790.

opening new lands to settlement. The embargo had destroyed the trade of New England, and had weighted down her citizens with debt and taxation; caravans of Yankee emigrant wagons, precursors of the ‘prairie schooner,’ had already begun to cross Pennsylvania on their way to Ohio; and they now greatly increased in number. North Carolina back countrymen flocked to the Indiana settlements, giving the peculiar Hoosier flavor to the State, and other Southerners followed, outnumbering the Northern immigrants, who sought the eastern edge of Indiana.”²

² Turner, *The Frontier in American History*, 134.

The war with Tecumseh and the War of 1812 hindered settlement only temporarily, and by the treaties made at their conclusion, and the treaties of 1818, the Indians were pressed still farther north.

"In the meantime, Indian treaties had released additional land in southern Illinois, and pioneers were widening the bounds of the old French settlements. Avoiding the rich savannas of the prairie regions, as devoid of wood, remote from transportation facilities, and suited only to grazing, they entered the hard woods—and in the early

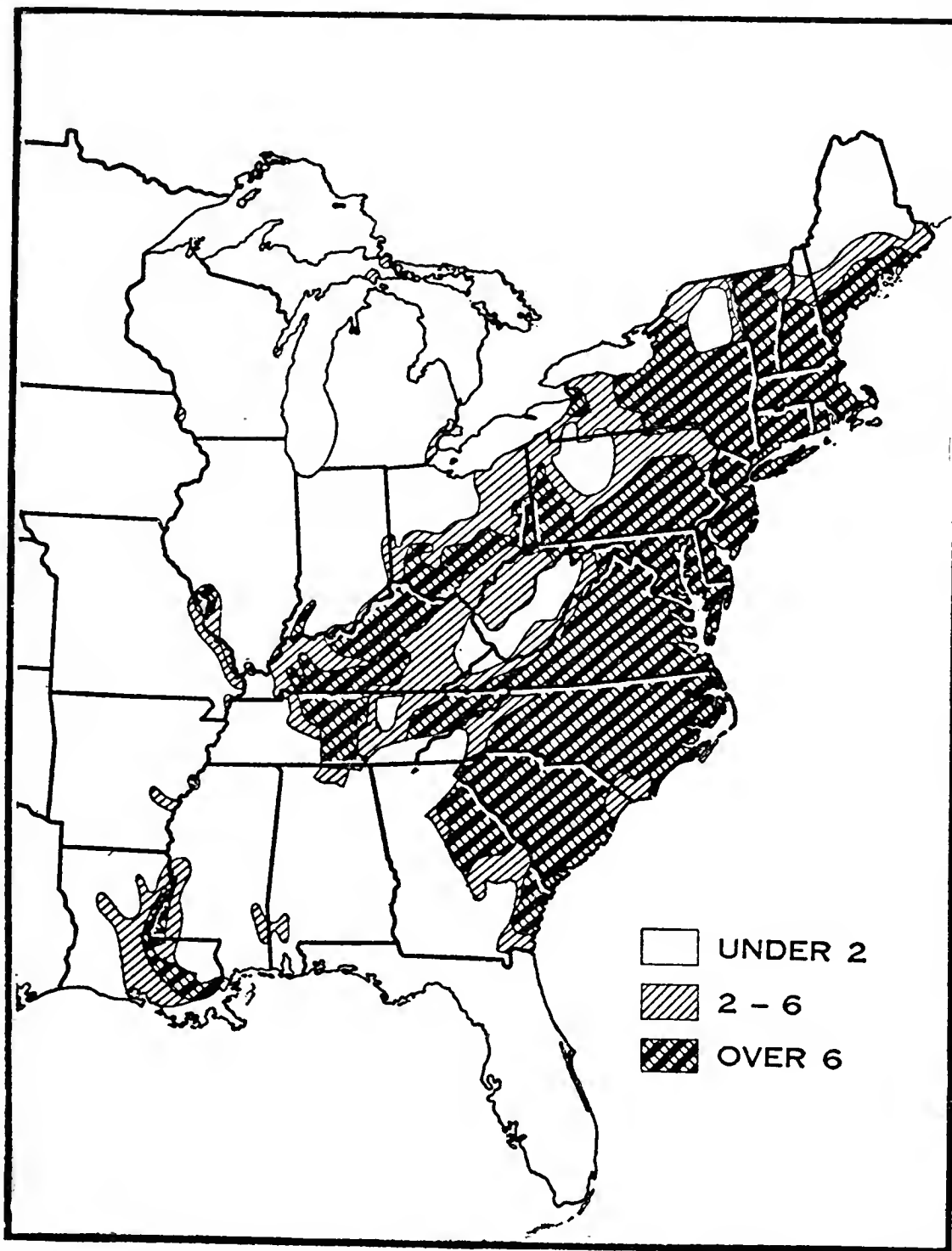


FIG. 6.—Population per square mile, 1810.

twenties they were advancing in a wedge-shaped column up the Illinois Valley. . . . While the hard woods of Illinois were being entered, the pioneer movement passed also into the Missouri Valley. The French lead miners had already opened the southeastern section, and Southern mountaineers had pushed up the Missouri; but now the planters from the Ohio Valley and the upper Tennessee followed, seeking the alluvial soils for slave labor. Moving across the southern border of free Illinois, they had awakened regrets in that State at the loss of so large a body of settlers.

"Looking at the Middle West, as a whole, in the decade from 1810 to 1820, we perceive that settlement extended from the shores of Lake Erie in an arc, following the banks of the Ohio till it joined the Mississippi, and thence along that river and up the

Missouri well into the center of the State. The next decade was marked by the increased use of the steamboat; pioneers pressed farther up the streams, etching out the hard wood forests well up to the prairie lands, and forming additional tracts of settlement in the region tributary to Detroit and in the southeastern part of Michigan. In the area of the Galena lead mines of northwestern Illinois, southwestern Wisconsin, and northeastern Iowa, Southerners had already begun operations; and if we except Ohio and

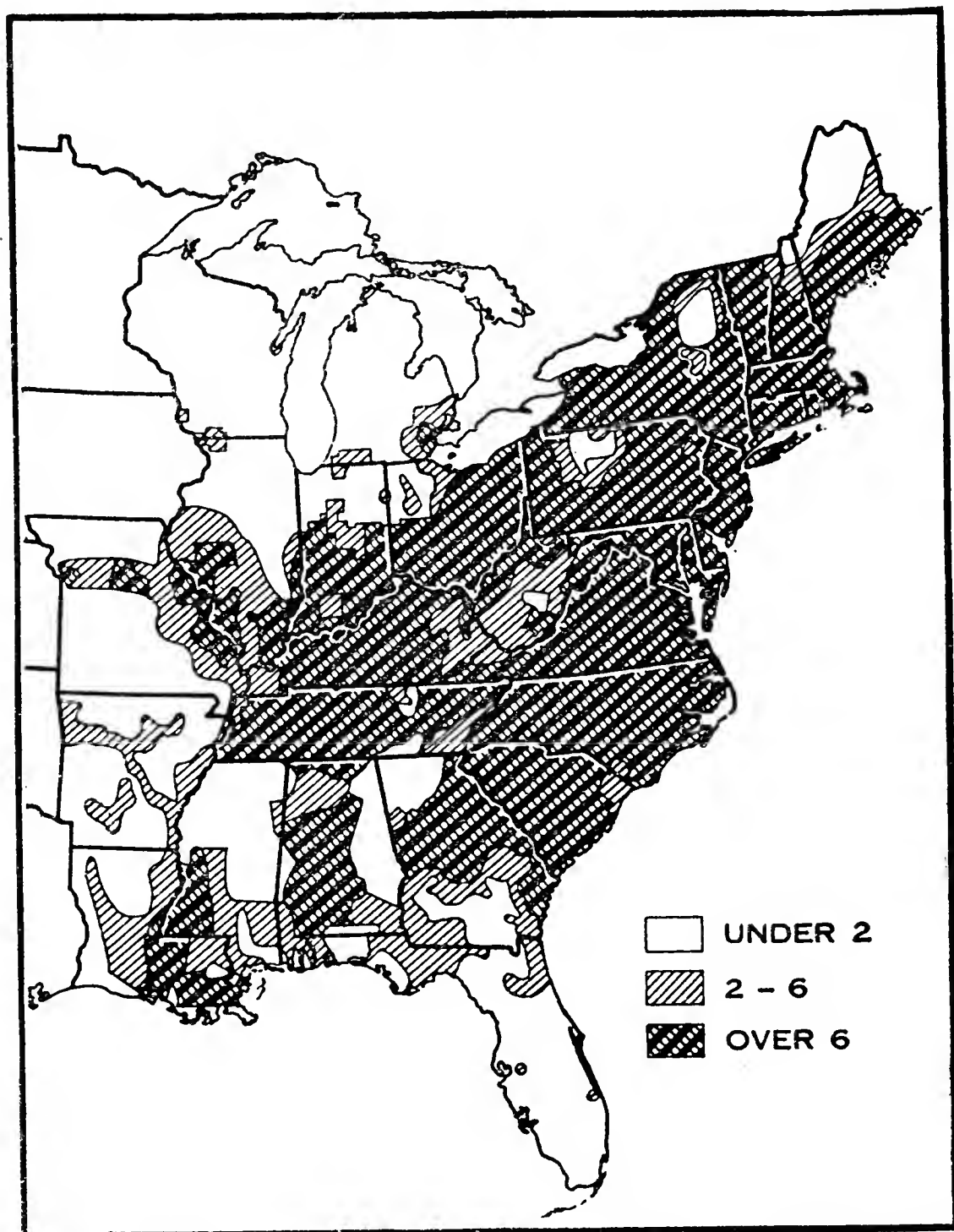


FIG. 7.—Population per square mile, 1830.

Michigan, the dominant element in all this overflow of settlement into the Middle West was Southern, particularly from Kentucky, Virginia, and North Carolina. The settlements were still dependent on the rivers for transportation, and the areas between the rivers were but lightly occupied.”³

In the decade 1830–1840 the influence of the Erie Canal became apparent. It was at this time more important as a highway of immigration than as an outlet for the products of the West, carrying thousands of New Englanders to their homes in the new country. By 1840 settlements had been carried over the whole extent of Indiana, Illinois, and across Michigan and Wisconsin

³ Turner, *The Frontier in American History*, 134–136.

as far north as the forty-third parallel. Population had crossed the Mississippi River into Iowa Territory, occupying a broad belt up and down that stream, and in Missouri settlements had spread northward from the Missouri River nearly to the boundary of the State and southward till they covered most of the southern portion.

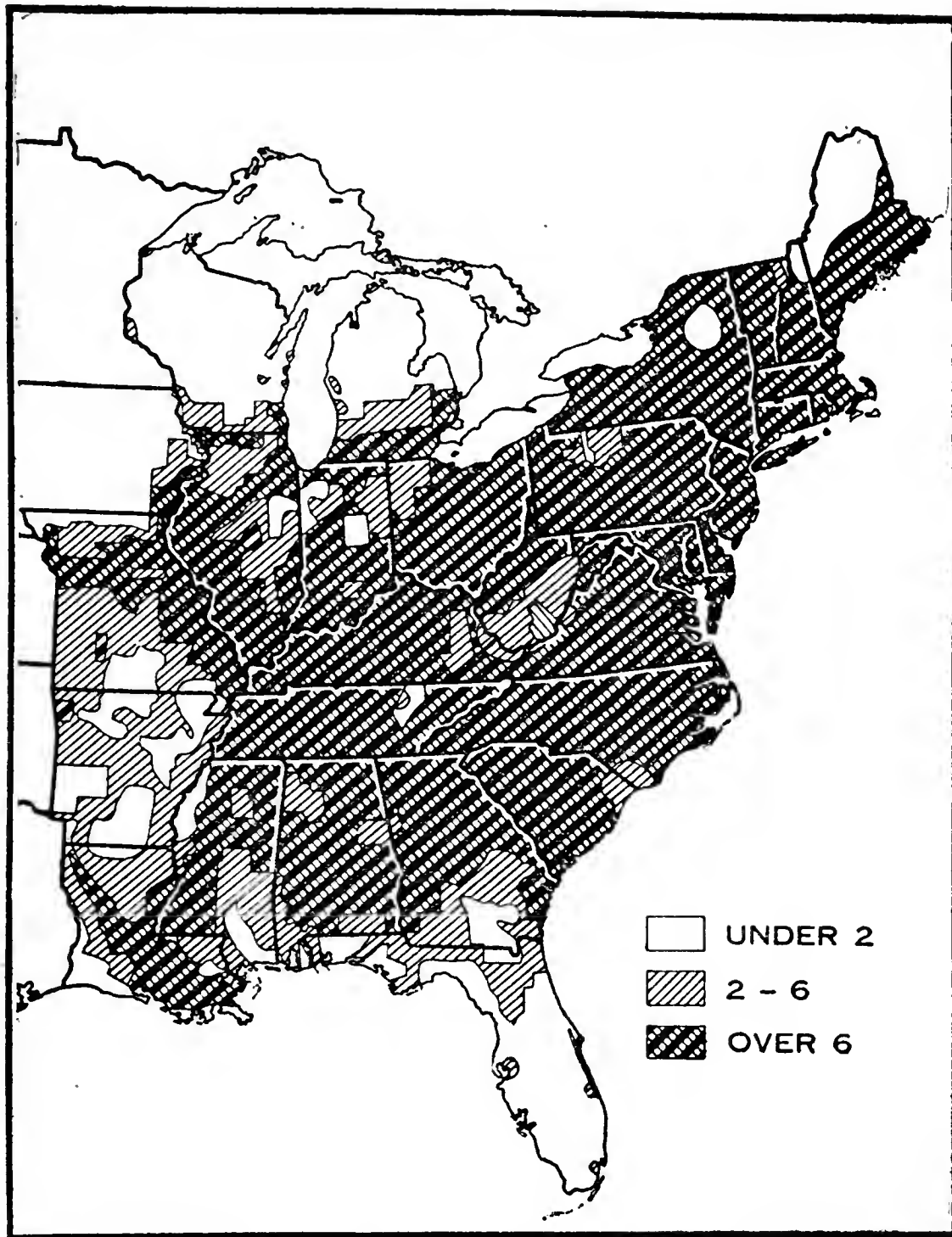


FIG. 8.—Population per square mile, 1840.

The increase in population in the region west of the Alleghenies and north of the Ohio is shown in table 22. The percentage increase by decades in the new territory is shown in table 23.

HOW THE GOVERNMENT POLICY FAVORED SETTLEMENT— THE FEDERAL LAND POLICY, 1785-1840.

In the policy adopted by our new national government in respect to the colonization of the west, four important features may be distinguished. In the first place, by the establishment of the territorial form of government, liberal political privileges were guaranteed the settlers in the new country.

Their commercial relations with the older communities to the eastward were to be forever free from tariff restrictions or duties. Toward the native tribes who were occupying the land the government adopted a firm policy which, whatever might have been its ethical aspects, did, nevertheless, effec-

TABLE 22.—Increase of population west of the Alleghenies, 1790–1840.

	1790.	1800.	1810.	1820.	1830.	1840.
Western New York ^a	1,074	17,006	75,618	265,325	406,858	548,308
Western Pennsylvania ^b .	108,934	197,417	290,115	390,593	528,831	729,086
Ohio		45,365	230,760	581,295	937,903	1,519,467
Indiana		5,641	24,520	147,178	343,031	685,866
Illinois			12,282	55,162	157,445	476,183
Michigan			4,762	8,765	31,639	212,267
Missouri			20,845	66,557	140,455	383,702
Wisconsin						30,945
Iowa						43,112
Total	110,008	265,429	658,902	1,514,875	2,546,162	4,628,936

^a The figures given for 1790 are for Ontario county and for later dates for approximately the same area.

^b For 1790 the counties of Allegheny, Washington, Fayette, Westmoreland, Northumberland, Bedford, Huntingdon, and Mifflin were included, and for later dates approximately the same area. A map showing county lines as of 1790 is given in *A Century of Population Growth*.

tively remove a hostile menace from in front of the advancing waves of settlement.

In the disposition of the public lands, although financial considerations were at first dominant, the policy eventually adopted was one which aimed to put those lands as speedily as possible into the hands of actual settlers. In the

TABLE 23.—Percentage increase of population west of the Alleghenies, 1790–1840.

	1790–1800.	1800–1810.	1810–1820.	1820–1830.	1830–1840.
Western New York.....	149.8	344.0	250.9	53.4	34.7
Western Pennsylvania	81.9	47.0	34.6	35.4	37.9
Ohio		408.6	151.9	61.3	62.0
Indiana		334.6	500.2	133.0	99.9
Illinois			349.1	185.4	202.4
Michigan			84.0	260.9	570.9
Missouri			219.2	111.0	173.1
Wisconsin					
Iowa					
Summary	141.3	148.4	129.8	68.0	81.8

ordinance of 1785 was laid the foundation of the American public land policy. The now familiar system of rectangular surveys was established by this ordinance. Land was to be sold either by whole townships or by lots ("sections") of 1 mile square, at a minimum price of \$1 per acre. The receipts from sales under this ordinance proved disappointing, and Congress, being in urgent need of funds, reverted to the policy of the colonial governments and agreed to the sale of several large tracts to land companies, notably the Ohio and

Scioto Companies. The sales to these companies and to other large purchasers in the years 1787 and 1788 amounted to about 1,500,000 acres, for which Congress received \$839,203 in its own depreciated currency and securities. Such transactions, although out of line with our general land policy, did nevertheless bring money into the treasury when it was badly needed and were instrumental in getting settlers into the new country.

THE CREDIT SYSTEM.

The land policy as laid down in 1785 was further developed by the act of 1796, which reaffirmed the principle of rectangular surveys, and raised the minimum price to \$2 per acre. However, by extending the period of payment from three months to one year it introduced an important new departure, the credit system. In 1800 the details of previous acts were more carefully worked out. The minimum price of \$2 per acre was retained, but the minimum tract which might be purchased was reduced to 320 acres (in the district west of the Muskingum River). A significant extension was made in the credit system. The purchaser was required to deposit only one-twentieth of the purchase money, exclusive of fees and surveying expenses, and then was given 40 days to make an additional payment bringing the total up to one-fourth.

"The balance of the price was divided into four annual payments due respectively two, three, and four years after the sale. On these payments interest at six per cent. 'from the date of sale' was charged, payable as they became due, but a discount of eight per cent. from the amount demandable was extended for prompt payments. If the final payment was not made within one year after it fell due the tract would be advertised for thirty days and sold at public sale for a price not less than the whole arrears due plus the expenses of the sale."⁴

Says Professor Treat:⁵

"Under the Act of 1800 the land system became a real factor in the westward movement, and it was the five-year credit period which rendered the act effective. Without the credit little land could be sold for two dollars an acre, but with it a man could pay fifty cents an acre and the balance within five years. The minimum lot was now reduced to three hundred and twenty acres, so that a payment of one hundred and sixty dollars entitled a settler to the use of a half section pending the payment of the balance—even if he were forced to forfeit the land he had had five years' occupation for that amount."

Under the operation of this act about 19,500,000 acres of public land were sold, of which 8,850,000 acres were in Ohio, 2,500,000 acres in Indiana, 1,600,000 acres in Illinois, and 1,250,000 acres in Missouri. For the 20 years during which the act of 1800 regulated the sales of public lands, the latter were administered from the financial rather than from the social point of view. That is, the idea of deriving revenue from the public domain was predominant over the idea of getting the land as speedily as possible into the hands of actual settlers. The credit system, by stimulating speculative purchases brought large revenues to the national treasury, but its easy terms proved disastrous to many settlers. With pioneer optimism they purchased as much as they could cover on the first payment, trusting to earn enough to cover the second installment before it came due, or hoping that rising land values would make the sale of a portion of the tract profitable.

⁴ Treat, *The National Land System*, 95.

⁵ *Ibid.*, 378.

LAND SPECULATION.

Land speculation became general. Birbeck⁶ wrote in 1818:

"The merchant invests his profits, and the professional man his savings, in the purchase of uncultivated lands. The farmer, instead of completing the improvement of his present possessions, lays out all he can save in entering more land. In a district which is settling, this speculation is said to pay on the average, when managed with judgment, fifteen per cent. Who then will submit to the toils of agriculture, further than bare necessity requires, for fifteen per cent? Or who would loan his money, even at fifteen per cent, where he can obtain that interest by investing it in land? Thus every description of men, almost every man, is poor in convertible property."

While crops were good and prices were high the credit system, with all its faults, was a helpful method of enabling capital-less pioneers to get control of land. But its dangers in a period of poor crops and falling prices were soon obvious. As early as 1804, Secretary Gallatin advocated the abolition of credit, but his advice was not followed. Petitions began to pour into Congress from small purchasers who were unable to meet their payments, praying for an extension of time so that they might not lose their homesteads and investments. Congress, always sympathetic with the settler, afforded the desired aid in a succession of relief acts extending the period of forfeiture. Finally, in 1820, Congress took the bold step of abolishing the credit system altogether. At the same time the minimum price of land was reduced to \$1.25 per acre and purchasers were allowed to buy as little as 80 acres. Under these provisions a settler who had \$100 in cash might purchase outright an 80-acre farm, but under the credit system \$100 would have been little more than enough to meet the first payment on the smallest tract purchasable, a quarter-section. The act of 1820 marks a turning-point in our land policy; from that date an ever-increasing emphasis has been laid on adjusting the land laws to the needs of the settlers and nation's financial needs have been secondary.

PREEMPTION ACTS.

A further development of what may be called the social ideal in land policy is seen in the series of acts relating to preemption which were passed in the years 1801 to 1841. These laws granted to squatters, i. e., unauthorized settlers on public lands, the right, when such lands were opened to entry, to purchase at the minimum price in advance of the public sale, thus affording protection against the competition of speculators. The necessity for such legislation arose from the unsystematic and unregulated method of settlement. Settlement did not wait for the extension of the land system.

"Where land was held under foreign titles the period of confirmation would delay the surveys and regular sales but would permit of speculation and some increase of population. And even the most rapid surveying could not keep up with the land-hungry settlers who preferred to squat on unsurveyed land, in the hope of securing a preemption, rather than buy inferior land at the minimum price or pay a premium for the better land at the auction sale. The surveyors had to run their lines over good, bad and indifferent land. The squatters would locate only on the best. For that reason the surveys could not, even if money were available, keep pace with the settlers. While the linesmen were struggling through some morass or thicket the squatters were ringing trees along a likely river bottom. Therefore a map of the extension of the surveys would not agree with a map of the population of the public land states. For people would be settled on unsurveyed land and considerable surveyed land would still be unsold."⁷

⁶ *Letters from Illinois*, 85.

⁷ *Treat, National Land System*, 162.

SIGNIFICANCE OF THE RECOGNITION OF
PREEMPTION RIGHTS.

The recognition of preemption rights of squatters antedates the national land system. As early as the middle of the eighteenth century it was a well-recognized feature of the land system of colonial Pennsylvania, and was incorporated in the earliest legislation for the disposal of unoccupied lands after the colony had become a state.⁸ In Congress the principle of preemption was recognized as early as 1790, although no acts of a general nature were passed until 1803. The delay of surveys in Michigan and in Illinois led to preemption being granted by general acts to settlers in those territories in 1808 and 1813.

"By 1820, . . . Congress had recognized squatting to the extent of granting some measure of preemption to everyone of the public land States and territories save Indiana. . . . From 1820 to 1841 the representatives of the public land States urged the desirability of a general preemption act. Beginning in 1830, temporary preemption laws, covering a limited period but of a general nature, were passed. Finally, in 1841, a general preemption law was enacted and the long struggle of the pioneer for recognition and for the right to reap the reward of his enterprise was won."⁹

The recognition of the right of preemption was not equivalent to a free grant. The squatters must still buy their lands. The enactment of preemption laws, however, established the principle that actual settlers should have prior rights over all other purchasers.

Technically, the squatter throughout this period had been a lawbreaker. Congress in 1787 had twice ordered its troops to move against unauthorized settlers who were locating on the public lands. Western lands then being regarded as a source of revenue, they might not be taken up by land-hungry settlers, and in 1807 strict laws were passed prohibiting unauthorized settlement. But the preemption idea gained strength with the increasing importance of western settlement. In this case, as in dealing with the credit system, Congress showed a lack of consistent policy. It proved more and more sympathetic with the point of view of the pioneers. The squatter came to be regarded not as a lawbreaker but as a model of public virtue. His bravery and self-sacrifice in clearing land and making a home in a new country were accounted of greater importance than his trespass in crossing the legal frontier. The strict theory of the land system demanded that he be evicted, without compensation for improvements, and that his land be sold to the highest bidder. But in practice, even in the absence of preemption laws, the squatter was protected by the public sentiment of the frontier community. It demanded that the purchaser of his land should compensate him for his improvements and at times was strong enough to protect him from competition at the public sale and secure him a virtual preemption right at the minimum price.¹⁰

⁸ See p. 72.

⁹ Treat, *op. cit.*, 385, 386.

¹⁰ The facts in the above discussion of the federal land policy have been taken principally from Professor Treat's monograph quoted above. The author has also consulted Sato, *The Land Question in the United States* in *J. H. U. Studies in Historical and Political Science*, IV, Nos. 7-9 (1886); Donaldson, *The Public Domain*, and Callender, *Economic History of the United States*, chs. XII and XIII.

THE FACTORS DETERMINING AGRICULTURAL DEVELOPMENT OF THE OHIO VALLEY.—THE CHARACTER OF THE PIONEER POPULATION.

Besides the legal and political institutions discussed above there were three sets of conditions which determined the development of agriculture in the great district drained by the Ohio and its tributaries: (1) the characteristics of the emigrants themselves; (2) the physical environment, and (3) economic conditions. As regards the characteristics of the settlers little need be said. They had the typical pioneer virtues and defects. They were self-reliant and impatient of control to the point of lawlessness, and were more disposed to fitful violent exertions than to steady, unremitting application to farming. In their racial origins they combined all the elements represented in the original settlements on the Atlantic coast, but in the pioneer stage local prejudices were still strong enough to prevent much amalgamation by intermarriage. The antagonism between New Englanders and the emigrants from Virginia and North Carolina was particularly marked.¹¹

PHYSICAL FEATURES OF THE DISTRICT OF THE OHIO VALLEY.

On crossing the mountains, the pioneers entered a region admirably adapted by nature for the development of a thriving agricultural industry. Its abundant rainfall and the long, warm summers fitted it for the principal cereal crops, particularly maize. In soil and configuration there were great differences in various parts of the great region drained by the Ohio and its tributaries. In the mountainous districts of southwest Virginia, western Virginia, western North Carolina, eastern Tennessee, and eastern Kentucky tillage was practicable only in the broad valleys between the greater ridges. In the unglaciated region south of the Ohio river in Kentucky and Tennessee there are sharp contrasts in soils. Where the earth is underlaid with coal measures, as in eastern Kentucky and in central Tennessee, the soils are usually thin and unfertile, but where the limestones appear at the surface the soil immediately takes on an exceedingly fertile character. Such a region is the famous bluegrass region of Kentucky, so named from the luxuriance with which the species of grasses belonging to the genus *Poa* flourish there. In the region north of the Ohio, the district with which this essay is chiefly concerned, glacial action had produced soils of remarkable fertility and endurance. Over a level surface of sedimentary rocks the ice-sheets had deposited a smooth, thick mantle of finely divided silt and boulder clay. On this as a subsoil decaying vegetable matter had accumulated for centuries with little loss from erosion. The pioneers in this region had, then, two advantages over their kinsmen east of the mountains: their soils were better and their fields, owing to their smoothness and lack of stones, were more easily tilled.¹²

¹¹ See Hubbard, *Family Memories*, 68; Harris, *Journal*, 58.

¹² The discussion of physiography in this and following paragraphs is from Shaler, *United States*, I, ch. iii; Brigham, *Geographical Influences in American History*, chs. iii-v, and Bowman, *Forest Physiography*, 486-491.

NATURAL CLEARINGS OR TREELESS PLAINS.

A natural feature of great importance to the pioneer was the presence or absence of forestation. The pioneer agriculture of the seventeenth and eighteenth centuries had been woodland agriculture, and a large part of the activities of the first generation of settlers had been devoted to chopping trees and burning logs. It is important to remember that the early pioneers west of the Alleghenies were engaged in just this type of farming. On crossing the mountains they emerged not on the prairies, but on broad, heavily-wooded plateaus sloping gently to the broad plain of the Mississippi Valley on the west, and northwest to the basin of the Great Lakes. Extending on a broad belt across western New York and Pennsylvania and covering all of Ohio and perhaps seven-eighths of Indiana, these plateaus and the equally well wooded river valleys that dissected them were the scene of the typical western agriculture of the years 1790 to 1840. Illinois is the first prairie State east of the Mississippi, but, for reasons discussed below, there was until about 1830 little prairie farming in that State.

The plateaus were not entirely forest-covered. The natural openings or treeless meadows which were so welcome a sight to the earliest arrivals on the Atlantic Coastal Plain seem to have been even more numerous and certainly more extensive on the western slopes of the Appalachian Range. Christopher Gist,¹³ who was one of the first to explore and describe the new region, wrote when near the present site of Circleville: "All the way from Licking Creek to this Place is fine rich level Land, with large Meadows, Clover Bottoms & spacious Plains covered with Wild Rye. . . ." Hutchins,¹⁴ who traversed the region a quarter of a century later, wrote:

"On the north-west and south-east sides of the Ohio, below the great Kanhaway river, at a little distance from it, are extensive natural meadows, or savannas. These meadows are from 20 to 50 miles in circuit. They have many beautiful groves of trees interspersed as if by art in them, and which serve as a shelter for the innumerable herds of buffalo, deer, &c. with which they abound."

Manasseh Cutler, in his *Description of Ohio* (1788),¹⁵ describes the plains or meadows in much the same language, but applies the typically western word "prairies" to them. It is evident, however, that he did not mean true prairies, for he adds: "There is no undergrowth on them and the trees which grow very high and become very large only need to be deprived of their bark in order to become fit for use."

In the Genessee country in western New York treeless plains were a feature so striking as to demand explanation.

"The openings, or large tracts of land, found frequently in this country free of timber, and showing great signs of having been once in a state of cultivation, are singularly curious. This sort of land, from the ignorance of the first settlers in regard to its quality, was supposed to be barren, and was therefore little valued: necessity, however, obliged some to attempt the cultivation of it, and they were agreeably disappointed on finding they had got a good crop, and in numberless instances they have continued to reap plentiful crops every year for seven years past. This kind of land, which,

¹³ *Journal* (1751), in *Filson Club Publications*, No. 13 (1898), p. 122. See also pp. 133, 145, 146.

¹⁴ *Topographical Description*, in Imlay, *Western Territory* (3d ed., 1797), p. 492.

¹⁵ In *Ohio Arch. and Hist. Soc. Publications*, III, 87.

six years ago would not have sold for a quarter of a dollar an acre, is now reckoned cheap at ten dollars an acre. It is difficult to account for these openings, or for the open flats on the Genesee River, where ten thousand acres may be found in one body, not even encumbered with a bush, but covered with grass of such height, that the largest bullocks, at thirty feet from the path, will be completely hid from the view."¹⁶

The pasturage afforded on the openings and prairies of the Allegheny plateau was a natural resource of great importance which merits detailed discussion later in this chapter.¹⁷

WOODLAND VS. PRAIRIE FARMING.

The tendency to neglect the openings, except for pasturage, and to clear woodland for tillage instead, was later strongly shown when the emigrants came into contact with the actual prairie in Indiana and Illinois. It seems illogical at first glance that they should have preferred to spend years of arduous toil in clearing woodland when fertile, unforested plains lay ready for the plow. But, taking everything into consideration, it would have been remarkable had they acted otherwise. For almost two centuries Americans had been pioneering in the forests, and clearing woodland had become a national habit. The processes of girdling, grubbing, log-rolling, and burning, and the construction of log houses represented a considerable body of technical knowledge, some of it committed to writing,¹⁸ but mostly handed down orally from one generation to another. In this technique of woodland farming the principles of soil selection according to the character of the forest cover held an important place.¹⁹ In general, a heavy growth of hardwood was regarded as evidence of a "strong" soil. The prairies grew no timber, their soils, therefore, were regarded with suspicion.

Moreover, forests were of great importance in pioneer economy. They sheltered the game on which the backwoodsman and his family relied for meat. They gave him the logs for his house, fuel for cooking and heating, and material for fencing and for the construction of a great variety of household furnishings and farm tools.

"Not to speak of wooden houses, bridges, and *roads*—of wood for fuel and fencing—we find it adopted in the west for purposes more anomalous, where wooden pins are substituted for nails, and wells are curbed with hollow logs, where the cabin door swinging on wooden hinges, is fastened with a wooden latch, and the smoke escapes through a wooden chimney. . . . Well may ours be called a *wooden country*; not merely from the extent of its forests, but because in common use wood has been substituted for a number of the most necessary and common articles—such as stone, iron, and even leather."²⁰

Water was another essential for family consumption and for the settler's livestock. The rivers furnished a cheap means of getting farm products to market at a time when land carriage for any distance was prohibitively ex-

¹⁶ *Description of the Genesee Country* (1799), in O'Callaghan, *Documentary History of New York*, II, 1147. See also *Ibid.*, II, 1107, 1132.

¹⁷ Below, pp. 159 et seq.

¹⁸ As in Dwight's *Travels*, Belknap's *New Hampshire*, and Lorain's *Nature and Reason Harmonized*, chap. 33. See references on pages 77 and 78.

¹⁹ Cooper, *Guide in the Wilderness* (1810), pp. 34-36.

²⁰ Hall, *Statistics of the West* (1836), p. 101.

pensive. The desire to be near watercourses was, then, an additional reason for avoiding the prairies and for the continuance of woodland farming.

Finally, prairie farming required more capital²¹ than woodland farming and with capital the early settlers in the Ohio Valley were not well supplied. Breaking up the tough sod of the prairie required three or four yoke of oxen and a heavy plough. When first broken up the soil yielded only a small crop, in fact it was often allowed to lie fallow over one season until the grass roots had thoroughly rotted. Consequently capital in the form of living supplies was essential on the prairie. In the woods, on the other hand, equipped only with an axe and a hoe, the pioneer might grub out the underbrush, girdle the trees, plant corn, and have a good crop the first year. Breaking up the prairies did, indeed, cost less per acre in terms of manual labor, but it cost more in terms of the labor of draft animals, horses, and oxen.²²

NATIVE GRASSES.

The rich native pasturage of the region west of the Alleghenies was an environmental advantage of first importance to the pioneers. The ease with which their small herds found sustenance in the natural openings and river bottoms and the rapidity with which they matured and multiplied were circumstances which lightened the unavoidable hardships of frontier farming. In addition to the wild rye and andropogons which grew here much more luxuriantly than along the Atlantic coast, the first arrivals found white clover and Kentucky bluegrass. Gist mentioned both of these grasses frequently as growing in Kentucky and Ohio.²³ There seems no doubt of the accuracy of his observations, which are supported by accounts of later observers.²⁴ The presence of these grasses in advance of settlement gave rise to the belief that they were indigenous. "The white clover," wrote Johnson²⁵ "appears to be a natural grass of the country; for, although never sowed, it covers every field and roadside, where the land has been neglected."

Recent researches, however, have shown that both the white clover and Kentucky bluegrass spread by natural dissemination from the Atlantic Coast, or perhaps were carried into the Ohio Valley by the French missionaries and traders from Canada.²⁶ As soon as clearings had been made and cattle turned out to graze the bluegrass and clover appeared with surprising rapidity.

A new species of forage was the cane which was found along the borders of the rivers in Southern Ohio, Kentucky, and Missouri.

²¹ See Faux, in Thwaite's *Early Western Travels*, XI, 256, 289. Flagg, in *Illinois State Hist. Soc. Transactions* (1910), p. 157.

²² This was pointed out by Faux, in Thwaite's *Early Western Travels*, XI, 256. See also *Ibid.*, 289; Flagg, in *Illinois State Hist. Soc. Transactions*, 1910, p. 157; Woods, *Illinois Country* (1819), p. 230; Adams, in *Mich. Pol. Sci. Assn. Publications*, III (1899), No. 7, p. 12. Lippincott, in *Journal of Political Economy*, XVIII, 276, note 23.

²³ *Journal*, 123, 133, 146, in *Filson Club Publications*, No. 13.

²⁴ See Imlay's *Western Territory*, 29, 233, 318; Rev. James Smith, in *Ohio Arch. and Hist. Soc. Quarterly*, XVI, 379; Welby, in Thwaite's *Early Western Travels*, XII, 218.

²⁵ *Letters from Pennsylvania*, 75. See also Cooper, *Guide in the Wilderness*, 36. Maude, *Visit to Niagara*, 24, 41.

²⁶ See Carrier and Bort, in *American Society of Agronomy, Journal*, VIII (1916), p. 265.

"The cane is a reed that grows to the height frequently of fifteen or sixteen feet, but more generally about ten or twelve feet, and is in thickness from the size of a goose-quill to that of two inches diameter; sometimes, yet seldom, it is larger. When it is slender, it never grows higher than from four to seven feet; it shoots up in one summer, but produces no leaves until the following year. It is an evergreen, and is, perhaps, the most nourishing food for cattle upon earth. No other milk or butter has such flavour and richness as that which is produced from cows which feed upon cane."²⁷

Hall,²⁸ writing in 1836, remarked:

"The first settlers find them [the cane brakes] very valuable, as affording food for their cattle during the winter; and even after the country has been many years settled, the inhabitants drive their cattle *to the cane* in the autumn, and suffer them to remain without any further attention until the ensuing spring. The cane, however, is generally destroyed in a few years, by the large number of cattle which are thus wintered upon it. Cattle and horses eat it greedily, and will stray several miles in search of this favorite food, which is said to be very nourishing."

In the natural clearings, both the smaller openings and the more extensive *prairies*, the natural vegetation furnished abundant and nutritious forage. Hall described two kinds of prairie grass. The first was evidently a wild rye or one of the *andropogons*, which, in the summer, he says,

"soon assumes a golden hue, and waves in the wind like a ripe harvest. . . . In the low, wet prairies, where the substratum of clay lies near the surface, the centre of main stem of this grass, which bears the seed, acquires great thickness, and shoots up to the height of eight or nine feet, throwing out a few long coarse leaves or blades, and the traveler often finds it higher than his head as he rides through it on horseback. The plants, although numerous and standing close together, appear to grow singly and unconnected, the whole force of the vegetative power expanding itself upward. But in the rich undulating prairies, the grass is finer, with less of stalk, and a greater profusion of leaves. The roots spread and interweave so as to form a compact even sod, and the blades expand into a close thick sward, which is seldom more than eighteen inches high, and often less, until late in the season, when the seed-bearing stem shoots up."²⁹

The latter type of prairie grass included, among others, two indigenous species not known east of the Alleghenies. They were known as buffalo grass and buffalo clover.

BUFFALO GRASS AND BUFFALO CLOVER.

The latter, one of the native clovers, was described as resembling English clover but larger. The buffalo grass was a coarse grass with a broad leaf. It was a member of the same family as the famous buffalo grass which was later so important in the development of the range and ranch cattle industries on the Great Plains. Unlike the wild rye, it made nutritious hay as well as good green forage.³⁰

The disappearance of the native grasses with the progress of clearing and cultivation was a matter of frequent comment. The white clover and Kentucky

²⁷ Imlay, *Western Territory* (3d ed., 1797), p. 29.

²⁸ *Statistics of the West*, 26. See also F. A. Michaux's description in Thwaite's *Early Western Travels*, III, 94.

²⁹ *Statistics of the West*, 74.

³⁰ *American Museum*, V (1788), p. 59; Woods, *Illinois Country*, 198; Atwater, *Ohio*, 92; Imlay, *Western Territory*, 233.

bluegrass spread or "volunteered" in the new region with remarkable rapidity. Birkbeck³¹ commented on this fact with keen intelligence. He said:

"The natural turf, in those spots where the shade is not too deep to allow a turf to be formed, is composed chiefly of annual grasses, or of such as wither down to the root in autumn: yet the perennial or evergreen species, which clothe the rich pastures of more northern climates with perpetual verdure, thrive here to admiration when sown even casually, and take entire possession of the soil, to the exclusion of the indigenous grasses. Where the little caravans have encamped as they crossed the prairies, and have given their cattle hay made of these perennial grasses, there remains ever after a spot of green turf for the instruction and encouragement of future improvers—a fact which, I think, is conclusive against the prevailing notion that the natural grasses, as they are called, are the best adapted to every soil and climate."

The cultivation of timothy and red clover had been begun in western New York and Pennsylvania by some of the earliest settlers. In Indiana and Illinois a few experiments had been made before 1840 with cultivated grasses in order to insure large cattle raisers against failure of the native herbage.³²

³¹ *Letters from Illinois*, 38. See also Flint, *Mississippi Valley*, II, 128; Bradbury in Thwaite's *Early Western Travels*, V, 294.

³² *Description of the Genesee Country*, in O'Callaghan, *Documentary History of N. Y.*, II, 1148; Maude, *Visit to Niagara*, 41, 72; Johnson, *Letters from Pennsylvania*, 74; Peck, *New Guide for Emigrants*, 277; Wood, *Illinois Country*, 200; Ellsworth, *Valley of the Upper Wabash*, 38.

CHAPTER XII.—PIONEER FARMING IN THE WEST. ECONOMIC CONDITIONS.

The outstanding characteristics of the farm economy of the early settlements were: (1) the *extensive* character of the enterprise, that is, the application of small amounts of labor and capital on large amounts of land, and (2) self-sufficiency, or production for consumption and not for sale.

An English traveler¹ acutely observed of the western settlements:

“Quantity of acres of produce is here thought to be of much greater importance than quantity per acre. The great object is to have as many acres as possible cleared, ploughed, set, sown, planted, and managed by as few hands as possible; there being little capital, and therefore little or none to spare for hired labour. Instead of five acres well-managed, they must have 20 acres badly managed. It is not how much corn can be raised on an acre, but how much from one hand or man, the land being nothing in comparison with labour.”

In these sentences Faux calls attention to one of the outstanding features of pioneer farm economy, its *extensiveness*. Capital and labor, being scarce, were spread thin over large tracts of land, which was cheap. We have already discussed the terms upon which land could be secured;² let us now examine the pioneer's capital equipment and his labor force.

SCARCITY OF CAPITAL GOODS.

Lack of capital and the lack of a market, cheap land and dear labor were the determining economic conditions of pioneer farming in the Ohio Valley as they had been in the back country of colonial times. The emigrant took little equipment with him into the wilderness—an axe, a gun, a few household goods, a cow, a yoke of oxen or a horse, a few sheep, and pigs. His farm implements, the bull-plough, the wooden cart with solid wheels, the V-shaped, wooden-toothed harrow, the sickle and later the cradle with which he harvested his wheat and small grain, his flail, fan and sieve used in threshing and cleaning, his hoes and forks, all were constructed principally of wood with iron parts secured from the local blacksmith. Farm buildings were not numerous. Barns were few, more numerous were corn-cribs and shelters for work horses. Hay and straw were stacked and foddered out of doors. Cattle, pigs, and sheep had commonly no shelter but the woods.³

¹ Faux, in Thwaite's *Early Western Travels*, XI, 177.

² Above, pp. 151 et seq.

³ Farm implements and their use are described in Howells, *Recollections*, 62, 154-156; Cockrum, *Pioneer History of Indiana*, 320-321; Smith, *Indiana*, I, 351; Beers, *Montgomery County, Ohio*, 293; Welker, in *Western Reserve Hist. Soc. Tracts*, IV, No. 86, p. 31; Young, *Chautauqua County, New York*, 85. Flint, in Thwaite's *Early Western Travels*, IX, 123, gives a detailed description of the cradle which he found in use in Southern Ohio, 1818-1820. The peculiar carts and ploughs used by the French colonists in Illinois are described by Reynolds, *My Own Times*, 22. On farm buildings see *Illinois State Hist. Soc. Transactions* (1910), p. 162; Howells, *Recollections*, 118; Wood, *Illinois Country*, 174; *Maine Farmer*, V (1837), p. 226.

After the middle of the century pioneering took on a more capitalistic form. When the development of southern and eastern markets and of internal transportation had made commercial agriculture possible on the prairies, the new settlers were able to equip themselves by borrowing capital from older communities. But while farming was still in the woodlands, markets were undeveloped and the pioneer farmer had to create, or accumulate, practically all of his slender stock of capital by his own labor.

SCARCITY OF FARM LABOR.

The routine tasks of the farm were performed by members of the farm family. In the newest settlements the families were mostly "young," that is, the children were nearly all small. In such families the farmer did most of the work himself with the help of one or two big boys. His wife, and perhaps an older daughter, was called on for help in planting and hoeing corn and to rake grain and hay at harvest time. "The rule was, that whoever had the strength to work, took hold and helped. If the family was mostly girls, they regularly helped their father in all the lighter farm work."⁴ In addition to occasional field work, the farm women regularly cared for the vegetable garden and the poultry, and carried on besides a great variety of industrial pursuits indoors, spinning, knitting, weaving, and making clothing both for themselves and for the men-folks. As a rule, the women did the milking and made the butter.

"Except in a Yankee family no man or boy could be induced to milk the cows, it being regarded as woman's work. But wherever a New Englander was found, he and the boys did the 'pailing' of the cows."⁵

Slavery had been prohibited in the Northwest Territory by the ordinance of 1787, nevertheless, efforts were made to evade its provisions and negroes were actually held in servitude, under the guise of indentured servants, in southern Illinois and Indiana until about 1820. This was not surprising, inasmuch as the early settlements in these States were made by slaveholders from Virginia and Kentucky. The number of such quasi-slaves was never very large; in Indiana in 1810 they were less than 250, out of a total population of 24,500, and in Illinois in 1818 they numbered about 800 in a total of 40,000.⁶

Free white labor for hire was almost entirely lacking in the early decades of the century. The children of poor families were sometimes "bound out" or apprenticed at farm work, and occasionally a farmer might employ one of the poorer emigrants while the latter was earning money to buy land. These were few, and with the prevailing high rate of wages and cheapness of land they did not long remain hired hands. An English traveler in Illinois in 1818 wrote:

"A man used to work will earn in one day what will suffice for the simple wants of a Backwoodsman a whole week. If he be sober and industrious, in two years he can enter a quarter section of land, buy a horse, a plough, and tools. The lowest price for labour now is 13\$ per month with board and lodging."

⁴ Howells, *Recollections*, 156.

⁵ Welker, in *Western Reserve Hist. Soc. Tracts*, IV, No. 86, p. 50.

⁶ Esarey, *Indiana*, I, 197, 203; Buck, *Illinois in 1818*, pp. 138, 318.

⁷ Ogg, *Fordham's Personal Narrative*, 210.

The English farmers, Birkbeck, Flower, and others, who came to Illinois with plenty of capital, expecting to carry on large-scale farming, found their plans upset by the lack of a class of farm laborers. At first they attempted to solve the difficulty by the importation of English laborers, but the relief was only temporary, for the new arrivals soon were affected with the desire to be landowners. Finally the English were "forced to the conclusion that Illinois was a good location only for the small farmer who was willing to work his land without hired labor."⁸

GROUP COOPERATION.

Habits of group cooperation were brought by the pioneers from their eastern homes across the mountains. The clearing of land and building of log houses, reaping, the handling of flax, corn-huskings, the picking of cotton, sewing, and quilting were all accomplished by the united labor force of a number of neighboring families and were made occasions for recreation and social intercourse. Bradbury⁹ wrote:

"It is necessary to remark, that in the early part of the settlement of a country like this, a great number of things occur necessary to be done, which require the united strength of numbers to effect. In those parts, money cannot purchase for the new settler the required aid; but that kind and generous feeling which men have for each other, who are not rendered callous by the possession of wealth, or the dread of poverty, comes to his relief: his neighbours, even unsolicited, appoint a day when as a *frolic*, they shall, for instance, build him a house. On the morning of the appointed day they assemble, and divide themselves into parties, to each of which is assigned its respective duty; one party cuts down the trees, another lops and cuts them to proper lengths, a third is furnished with horses and oxen, and drags them to the spot designed for the scite of the house: another party is employed in making *shingles* to cover the roof, and at night all the materials are ready upon the spot; and on the night of the next day, he and his family sleep in their new habitation. No remuneration is expected, nor would it be received. It is considered the performance of a duty, and only lays him under the obligation to discharge the debt by doing the same to subsequent settlers. But this combination of labour in numbers, for the benefit of one individual, is not confined to the new comer only, it occurs frequently in the course of a year amongst the *old settlers*, with whom it is a continued bond of amity and social intercourse, and in no part of the world is good *neighbourship* found in greater perfection than in the western territory, or in America generally."

SELF-SUFFICIENCY.—THE LACK OF MARKETS.

A second economic characteristic of western pioneer farming was its self-sufficiency, that is, crops and livestock were produced chiefly for farm consumption rather than for sale. Trade in farm products, as we shall see,¹⁰ was not entirely absent in the early western settlements. Wheat and cattle, potash and lumber were exported from the communities in western New York almost immediately after their settlement. The pioneers in the Ohio Valley had begun to ship flour, pork, whisky and tobacco to the New Orleans market before 1800, and soon after that date the first cattle were driven across the

⁸ See Buck, *Illinois in 1818*, p. 136, and sources quoted there.

⁹ In Thwaites, *Early Western Travels*, V, 282; see also Howells, *Recollections*, 145; Woods, *Illinois Country*, 203, 213.

¹⁰ See p. 169.

mountains to eastern markets. But throughout the period of woodland farming the organization of the farm enterprise was determined by the needs of the farm family and not by market conditions. Crops were selected and animals were raised for the production of food for the farm needs. Occasionally a surplus was marketable and with the proceeds a small amount of store goods could be bought. Otherwise, the farm produced all that the farm consumed. Self-sufficiency was a uniform characteristic of all pioneer settlements west of the Alleghenies from western New York to Missouri.

The following description of pioneer farm life in Illinois would apply equally well to all the early western settlements:¹¹

"The farmer raised his own provisions; tea and coffee were scarcely used, except on some grand occasions. The farmer's sheep furnished wool for his winter clothing; he raised cotton and flax for his summer clothing. His wife and daughters spun, wove, and made it into garments. A little copperas and indigo, with the bark of trees, furnished dye stuffs for coloring. The fur of the raccoon, made him a hat or a cap. The skins of deer or of his cattle, tanned at a neighboring tan-yard, or dressed by himself, made him shoes or moccasins. Boots were rarely seen, even in the towns. And a log cabin, made entirely of wood, without glass, nails, hinges, or locks, furnished the residence of many a contented and happy family. The people were quick and ingenious to supply by invention, and with their own hands, the lack of mechanics and artificers. Each farmer, as a general thing, built his own house, made his own ploughs and harness, bedsteads, chairs, stools, cupboards, and tables. The carts and wagons for hauling, were generally made without iron, without tires, or boxes, and were run without tar, and might be heard creaking as they lumbered along the roads, for the distance of a mile or more."

PROGRESS FROM PIONEERING TO SETTLED FARMING.

To describe the farming operations of any region at a given date is a formidable task. Differences in soil and in the intelligence, energy, and equipment of neighboring farmers make generalization difficult. But at a time when rapid changes are in progress, as from self-sufficient to commercial agriculture, it becomes impossible to select features of farm practice which can be considered typical or normal for the whole area. The Ohio Valley was in the midst of such a transition in the first half of the nineteenth century. At the front of the wave of settlement, as it advanced successively over western New York and Pennsylvania, Ohio, Indiana, and Illinois, there were typical frontier conditions, scattered population, rough life, lack of markets, and primitive agriculture. As the wave rolled on conditions behind it changed rapidly. Population became denser, trails changed to roads, log cabins gave way to comfortable houses, clearings became farms, ragged villages grew into towns. Distant markets became accessible by improved transportation facilities, chiefly canals in this period, and home markets developed in the growing river towns. With an outlet for their produce thus provided, farmers were stimulated to increase production by more careful tillage and by the conservation of manures. They built better barns and bought improved breeds of cattle, sheep, and swine. And so in a comparatively short time the region took

¹¹ Ford, *Illinois*, 41. See also Young, *Chautauqua County, New York*, 89; Howells, *Recollections*, 123-125; Gottfried Duden's *Report* in *Mo. Hist. Review*, XII (1917-1918), pp. 166, 175; Welker, in *Western Reserve Hist. Soc. Tracts*, IV, No. 86, pp. 43-48; Lippincott, *Pioneer Industry*, in *Journal of Political Economy*, XVIII (1910), 274, 280.

on the prosperous appearance of the long-settled communities of the Eastern States. Just when the backwoods life disappeared in any particular State can be determined only by exhaustive research in local history. It seems safe to say, however, that by 1830 frontier conditions were no longer typical of Ohio. A corresponding date for Indiana, Illinois, and southern Michigan would be, perhaps, 1850.

The changing character of the inhabitants of the Middle West illustrates the progress from pioneering to settled farming. The Scotch traveler, James Flint,¹² wrote:

“All who have paid attention to the progress of new settlements, agree in stating, that the first possession of the woods in America, was taken by a class of hunters, commonly called backwoodsmen. These, in some instances, purchased the soil from the government, and in others, placed themselves on the public lands without permission. . . . The improvements of a backwoodsman are usually confined to building a rude log cabin, clearing and fencing a small piece of ground for raising Indian corn. A horse, a cow, a few hogs, and some poultry, comprise his live-stock; and his farther operations are performed with his rifle. The formation of a settlement in his neighbourhood is hurtful to the success of his favourite pursuit, and is the signal for his removing into more remote parts of the wilderness. In the case of his owning the land on which he has settled, he is contented to sell it at a low price, and his establishment, though trifling, adds much to the comfort of his successor. The next class of settlers differ from the former in having considerably less dependence on the killing of game, in remaining in the midst of a growing population, and in devoting themselves more to agriculture. A man of this class proceeds on a small capital; he either enlarges the clearings begun in the woods by his backwoodsmen [sic] predecessor, or establishes himself on a new site. . . . He does not clear away the forest by dint of labour, but girdles the trees. By the second summer after this operation is performed, the foliage is completely destroyed, and his crops are not injured by the shade. He plants an orchard, which thrives and bears abundantly under every sort of neglect. . . . This second rate class of farmers are to be seen in the markets of towns, retailing vegetables, fruits, poultry, and dairy produce. . . . The settler of the grade under consideration, is only able to bring a small portion of his land into cultivation, his success, therefore, does not so much depend on the quantity of produce which he raises, as on the gradual increase in the value of his property. When the neighbourhood becomes more populous, he in general has it in his power to sell his property at a high price, and to remove to a new settlement, where he can purchase a more extensive tract of land, or commence farming on a larger scale than formerly. The next occupier is a capitalist, who immediately builds a larger barn than the former, and then a brick or a frame house. He either pulls down the dwelling of his predecessor, or converts it into a stable. He erects better fences, and enlarges the quantity of cultivated land; sows down pasture fields, introduces an improved stock of horses, cattle, sheep, and these probably of the Merino breed. He fattens cattle for the market, and perhaps erects a flour-mill, or a saw-mill, or a distillery. Farmers of this description are frequently partners in the banks; members of the State assembly, or of Congress, or Justices of the Peace.”

It is Flint's “second-rate class of farmers” which we have chiefly in mind in the following description of farming operations.

LIVESTOCK AND ITS MANAGEMENT.

Every settler had a few cattle, enough to furnish milk and butter for his family and a yoke or two of steers for the farm work. These with a few sheep

¹² In Thwaites, *Early Western Travels*, IX, 232-235; cf. Ogg, *Fordham's Personal Narrative*, 125; Fearon, *Sketches of America*, 224; Flower, *English Settlement*, 67-72.

of mongrel breeds, a large herd of wild swine, and fowls, geese, and ducks constituted his livestock. The methods of raising and caring for all kinds of farm animals seem at this date inexcusably neglectful, but considering the scarcity of labor and capital and the limited marketing opportunities, they were probably at that time sound farm management. Unsheltered the year round, the cattle and swine ran at large in the woods, each owner recognizing his animals by their ear-marks. Winter fodder was scarce. But little hay was cut either of the natural or imported grasses. Careful farmers had bundles of the dried blades of Indian corn and pumpkins which they fed in the winter, but in many cases the animals had to shift for themselves summer and winter. All calves were preserved without regard to quality. Cows returned to their calves mornings and evenings when they were partly milked, and the calves had the remainder of the milk. Under such conditions the deterioration of the stock was inevitable. Even westerners admitted that their neat cattle were usually inferior in size to those of the older States and that cows did not produce the same amount of milk nor of as rich a quality.¹³ When slaughtered they would weigh from 700 to 900 pounds and those which at 4 or 5 years old would weigh 1,000 pounds were accounted exceptional.¹⁴

F. A. Michaux¹⁵ wrote from Kentucky in 1802:

“Of all domestic animals, hogs are the most numerous; they are kept by all the inhabitants, several of them feed a hundred and fifty or two hundred. These animals never leave the woods, where they always find a sufficiency of food, especially in autumn and winter. They grow extremely wild, and generally go in herds. Whenever they are surprised, or attacked by a dog or any other animal, they either make their escape, or flock together in the form of a circle to defend themselves. They are of a bulky shape, middling size and straight eared. Every inhabitant recognizes those that belong to him by the particular manner in which their ears are cut. They stray sometimes in the forests, and do not make their appearance again for several months; they accustom them, notwithstanding, to return every now and then to the plantation, by throwing them Indian corn once or twice a week.”

In early Illinois it was not uncommon for farmers to have herds of from 60 to 100 swine running in the woods.¹⁶ Such herds, however, were worth but little for the production of pork. They were allowed to run wild until 2 or 3 years old and then penned up for a few weeks' fattening before slaughtering. In some cases so wild were the animals that when butchering time came they were hunted in the forests and shot with the rifle.¹⁷ Many of them when mature did not weigh over 100 pounds. A good average would probably have been 175 to 200 pounds. A hog of 200 pounds was considered “a fine chunk of a fellow” and few exceeded that weight.¹⁸ As an eastern observer remarked: “It is true Pork in this country costs nothing and the way it is raised it is good for nothing.”¹⁹ He referred to the western hogs as “the meanest that I have ever seen. When I first came here I tho't by the looks of

¹³ Peck, *New Guide for Emigrants*, 282.

¹⁴ Woods, *Illinois Country*, 178, 181; see also Flint in Thwaites, *Early Western Travels*, IX, 163, 234, 310; Duden's *Report* in *Mo. Hist. Review*, XII (1917-18), p. 170; Flagg in *Illinois State Hist. Soc. Transactions* (1910), p. 158; Conner, *Indiana Agriculture*, 15; Bradbury, in Thwaites *Early Western Travels*, V, 284.

¹⁵ In Thwaites, *Early Western Travels*, III, 246.

¹⁶ Woods, *Illinois Country* (1819), p. 184.

¹⁷ Beers, *Montgomery County, Ohio*, 294.

¹⁸ Woods, *Illinois Country*, 184; Howell's *Recollections*, 64; Smith, *Indiana*, I, 356.

¹⁹ Flagg, in *Illinois State Hist. Soc. Transactions* (1910), p. 148.

the hogs that I had got to the place where roasted pigs run about the lots for they are crumped up and are Brown sandy colour. . . .”

CROPS AND TILLAGE.

A pioneer family required to begin with only 4 or 5 acres of cleared land. Half an acre was usually devoted to garden vegetables, another half-acre to wheat, and the remainder was the corn patch. Corn was usually the first crop on newly cleared land in the New West and, as on the earlier frontiers, was the chief support of the settlers. Cornmeal and hominy was practically the only breadstuff which they consumed, although wheat was often raised as a cash crop. The more progressive farmers carefully picked off the tops and blades of the maize from the stalks in the field and preserved them for winter fodder. This method was not only expensive of labor but caused considerable loss in the weight of the ears. A new method introduced into Ohio by the emigrants from the Potomac Valley in Virginia was to cut and stack the corn and feed it to the stock in the field. In localities where stock were fattened for “droving” to eastern markets the unhusked ears were fed with the stalks.²⁰

Corn was planted by hand, covered with the hoe, and cultivated with the shovel plough. (See fig. 59, p. 303.) The description given by Woods²¹ in 1819 shows but little, if any, change from colonial methods.

“The time of planting is from April to the middle of June; the middle of May is considered the most proper season. It is planted in rows, of about four feet in each direction; and after it is up they plough between the rows, first one way, and in a week or two in the other direction; a third ploughing is sometimes given to it. An extremely light plough, drawn by one horse, is used. Between the corn they hoe up the weeds left near the corners that escape the plough; so that the land is made very clean. Generally two or three plants are left at each angle. Pumpions are often planted at the angles with the corn, but only in every fifth or sixth row, and at some distance apart in the rows. They also plant a small kind of French-bean with part of their corn, the stalks serving instead of sticks for the beans to run on.”

It is doubtful whether many of the early settlers spent much time hoeing their corn. Flagg²² wrote from Edwardsville, Illinois, 1818:

“The method of Raising Corn here is to plough the ground once then furrow it both ways and plant the Corn 4 feet each way and plough between it 3 or 4 times in the Summer but never hoe it at all.”

In another place²³ he remarked:

“Corn grows from 10 to 15 feet high one Ear on a stalk. The ears grow very high. I have seen ears so high that I could not hang my hat upon them when standing upon the ground. . . . After Corn is planted there is no more done to it except to plow among it and cut up the Weeds. They hill it up not at all. 2 men plant 10 acres a day. Corn is always sold in the ear in th[is] state.”

On the prairies, after the sod had been turned and while the tough grasses were decaying, the so-called sod-corn was planted in the furrows. In this way a small crop was secured with no expense for cultivation.²⁴

²⁰ Howells, *Recollections*, 148. *Diary of a Naturalist*, in *American Journal of Science*, XXV (1834), p. 235.

²¹ *Illinois Country*, 210.

²² In *Illinois State Hist. Soc. Transactions* (1910), p. 162.

²³ Flagg, in *Illinois State Hist. Soc. Transactions* (1910), p. 147.

²⁴ Birkbeck, *Letters from Illinois*, 43; Lippincott, in *Journal of Political Economy*, XVIII, 276.

CORN MARKETED IN THE FORMS OF WHISKY AND PORK.

Corn in its original state was not marketable, being too low grade a commodity to stand high transportation costs, but it could be used to fatten swine which transported themselves to market. Another indirect way of marketing corn, and rye and barley as well, was by converting it into whisky. In western Pennsylvania the marketing of grain in the form of whisky was considered so important by the pioneer farmers that when, in 1794, an excise tax was imposed on distilled liquors they arose in insurrection.²⁵ In 1802 the obnoxious taxes were repealed and thereafter small distilleries could be found scattered throughout the western country. Not all the product was sent down the Mississippi; a great quantity was consumed by the pioneers themselves.

"No difference if grain was scarce or dear, or times hard, or the people poor, they would make and drink whiskey. And the number of little distilleries was wonderful. Within two miles of where we lived there were three of them. They were small concerns, but they produced enough. They were commonly fitted up with a twenty-five or forty-gallon still and half a dozen tubs. They might, perhaps, have produced a barrel a day, if pushed to their capacity. The distillers would exchange a gallon of whiskey for a bushel of corn or rye, and when the whiskey-jug was empty, a boy would be sent on a bag of grain, perched on an old horse, to the still-house to make the exchange and renew the supply. People were not particular about the age of their liquor, and it was often drank on the day it was made. The custom was for every man to drink it, on all occasions that offered; and the women would take it sweetened and reduced to toddy. At raisings, huskings, log-rollings, and all manner of social gatherings, it was used as an invigorator and a sign of hospitality; and the manner of taking it was from the neck of the jug, each man swallowing as much as he wanted."²⁶

WHEAT, A CASH CROP.

Wheat, in contrast to corn, was usually raised as a cash crop. F. A. Michaux²⁷ wrote:

"Les Américains de l'intérieur cultivent le bled, plutôt par spéculation pour en envoyer la farine dans les ports de mer, que pour leur consommation particulière: car les neuf dixièmes d'entr'eux ne font usage que du pain de maïs; . . ."

In some parts of the Allegheny plateau, as for example in the Genesee country, wheat and other small grains were scratched in with a harrow on newly-cleared land,²⁸ but on the bottom lands of Ohio and Kentucky wheat was not sown until the land had been under other crops for a year or two. A common practice farther west was to sow wheat among the standing corn in September and cover it by running a few furrows with the plough between the rows of corn. The dry cornstalks were then cut down in the spring and left on the ground.²⁹ Better wheat crops were obtained when oats intervened between the corn and wheat.³⁰

²⁵ *Pennsylvania Archives*, 2d series, IV (1790-1796), p. 6.

²⁶ Howells, *Recollections*, 125.

²⁷ *Voyage, etc.*, 117. This passage is incorrectly translated in Thwaites, *Early Western Travels*, III, 238.

²⁸ *Account of the Genesee Tract, in Imlay, Western Territory*, 477; Maude, *Visit to Niagara*, 40, 72.

²⁹ Peck, *New Guide for Emigrants*, p. 275; Flagg, in *Illinois State Hist. Soc. Transactions* (1910), p. 162.

³⁰ Faux, in Thwaites, *Early Western Travels*, XI, 187.

CROP YIELDS.

Making due allowance for the enthusiastic exaggeration typical of settlers in a new community, it was probably true that they secured larger crops of corn and wheat from their new farms than they could have raised with similar methods on land east of the mountains. The data upon which the earliest writers based their estimates must have been fragmentary; nevertheless they agree fairly well with those of the next generation. Filson (1788) thought the usual crop of corn in Kentucky "on the higher lands" would be 50 to 60 bushels to the acre and noted exceptional crops of 100 bushels. Wheat "upon a moderate computation" produced 30 bushels.³¹ F. A. Michaux³² stated in 1802 that 40 or 50 bushels of corn would be considered a common crop and in abundant years from 60 to 75 bushels might be harvested. The usual crops of wheat he estimated at from 25 to 30 bushels. In western New York, near Oneida Lake, according to Maude³³ (1800), wheat yielded 25 bushels to the acre when sown on partially cleared land and harrowed in without plowing. On land free from stumps and unshaded, 30 or 35 bushels might be expected. The corn crops on new land were then estimated at from 30 to 45 bushels, with exceptional crops running as high as 60 bushels.³⁴ In the years 1815 to 1840 we have a number of estimates covering the settlements northwest of the Ohio River.³⁵ In general they agree that 50 bushels of corn and from 20 to 25 bushels of wheat were regarded as good average crops. These figures should not of course be interpreted to mean that in any year the crops on all farms would average 50 bushels of corn. They undoubtedly would have averaged much less because of the necessary inclusion of many defective crops. They indicate merely the yields which, with the usual cultivation on average soil, a settler might expect to receive.

³¹ In Imlay, *Western Territory*, 318. Practically the same estimates are given in *American Museum*, V (1788), p. 58, and by Cutler, in *Ohio Arch. and Hist. Soc. Publications*, III, 90.

³² In Thwaites, *Early Western Travels*, III, 238.

³³ *Visit to Niagara*, 32, 34, 40, 72.

³⁴ *Vanderkemp Papers*, in *Buffalo Hist. Soc. Publications*, II, 56; O'Callaghan, *Documentary History of New York*, II, 1148.

³⁵ Evans, in Thwaites, *Early Western Travels*, VIII, 194; Ogg, *Fordham's Personal Narrative*, 118; Hall, *Statistics of the West*, 128, 130; Atwater, *Ohio*, 91; *N. Y. Farmer*, IX (1836), 99; Peck, *New Guide for Emigrants*, 197, 275.

CHAPTER XIII.—THE DEVELOPMENT OF INTERNAL TRADE AND THE BEGINNINGS OF COMMERCIAL AGRICULTURE IN THE WEST.

The development of the internal trade of the West in the early decades of the nineteenth century was a fact of great significance in American economic and political history.¹ The shipment of foodstuffs from the settlements in the Ohio Valley to the sugar and cotton plantations of the South, by enabling the latter to concentrate their attention on a single cash crop, favored the rapid extension of slavery and of the plantation system in that region. The westerners, on the other hand, with the proceeds of the sales of pork, flour, whisky, and tobacco were enabled to supply themselves with manufactured goods of both foreign and domestic make from the commercial centers east of the Alleghenies. The rise of manufactures in the East was in its turn promoted by the growth of markets in the South and in the West. The commerce across the mountains consisted at first almost wholly in the shipment of manufactured goods from east to west. The high cost of overland transportation prohibited the carriage of bulky farm products for long distances. The westerners, soon after 1800, began to drive cattle and swine across the mountains. After the completion of the Erie Canal had lowered transportation rates, western grain and provisions entered the markets of the Atlantic seaboard, competing disastrously with the products of eastern farms. The effects of western competition on eastern agriculture will be considered in a later chapter; for the present we shall keep the point of view of the westerners, outlining the development of their markets and considering the resulting changes in western farming.

PRODUCTS MARKETED FROM WESTERN NEW YORK.

Even in the earliest settlements markets were not entirely lacking. The pioneers of western New York, by the aid of considerable land transportation, were able to utilize the water routes of Lake Ontario to carry beef, pork, salt, flour, potash, and whisky to Quebec. They shipped wheat and flour by sleighs in winter to Schenectady for later reshipment to New York and the West Indies via the Mohawk and Hudson Rivers. Grain, whisky and lumber were floated down the Susquehanna to Baltimore. Cattle were driven to Philadelphia and Baltimore.² In Chautauqua County ashes were for many years an important article of trade and almost the only article which readily commanded cash.

“Many a settler who had a large surplus of grain which he was unwilling to sell at the ruinously low prices offered, cut and burned timber for the ashes from which to get

¹ See Callender, *Economic History of United States*, ch. VII.

² *Account of Genesee Tract*, in Imlay, *Western Territory*, 460; *Description of the Genesee Country* in O'Callaghan, *Documentary History of New York*, II, 1149, 1161, 1162, 1163; Munro, *Genesee Country*, *Ibid.*, II, 1174, 1184; Maude, *Visit to Niagara*, 29, 57.

money to pay taxes and for other necessary uses. These ashes, and those from burned log heaps, were sometimes drawn several miles over rough roads, and exchanged for goods, or at a reduced price for cash, if cash must be had.”³

THE SOUTHERN MARKET FOR WESTERN FARM PRODUCTS.

A natural outlet for the products of the region west of the Alleghenies was provided by the Ohio River, and its tributaries, and the Mississippi, and as early as 1746 flour and other commodities had been sent from the French settlements on the Wabash and Illinois Rivers to New Orleans.⁴ Exports of wheat from western Pennsylvania via the Mississippi to New Orleans and the West Indies had begun during the Revolution. By 1800 Pittsburg had become a center of a thriving trade, exporting corn, flour, and salt provisions to the south. Kentucky sent flour and smoked and salt pork down the river, but at this time the settlements north of the Ohio contributed very little.⁵

TABLE 24.—*Cargoes passing the falls of the Ohio at Louisville, 1810-1811.*^a

[Source: U. S. Bureau of Statistics (Treasury Dept.), *Report on Internal Commerce of United States* (1887), p. 187.]

Articles.	Quantity.	Articles.	Quantity.
Flour	bbls. 206,855	Butter	lbs. 41,151
Bacon	lbs. 1,008,026	Lard	lbs. 775,692
Whisky	bbls. 15,797	Onions	bbls. 364
Cider	bbls. 4,193	Potatoes	bbls. 3,019
Pork	bbls. 22,602	Hemp	cwt. 1,050,492
Apples	bbls. 4,200	Dried fruit	bbls. 442
Oats	bbls. 6,700	Yarn and cordage.....	lbs. 189,020
Corn	bu. 79,795	Fowls	no. 2,012,224
Merchandise	\$592,640	Shoe thread	lbs. 4,320
Cheese	bxs. 8,569	Country linen	lbs. 13,066
Beans	bbls. 1,010	Horses	489
Lumber	ft. 2,325,210	Beer	bbls. 459
Live hogs	no. 1,513	Tobacco	hhds. 3,891
Cider, royal	bbls. 2,250		

^a “These statistics, which were taken by the pilots engaged in piloting the vessels over the Ohio Falls, for three-fifths of the vessels passing that point of danger, and estimated for the remainder, which went over the falls during extreme high-water without a pilot, are in some respects more complete than many made afterwards when statistics of the river trade were much more carefully collected, for the later figures kept no record of the number of fowls, horses, etc., sent down the river.

“The list of articles now sent to market gives some idea of the advance and development that has taken place on the lower Mississippi with the advent of American rule.”

Until 1803 New Orleans was in the hands of foreign nations, first the Spanish and then the French, but the purchase of Louisiana in that year, by transferring the port to American possession, put an end to vexatious commercial restrictions and encouraged the trade of the upper Mississippi and Ohio Valleys. A rather careful estimate of the volume and character of the export trade of the Ohio Valley in the year 1810-1811 is given in table 24.

The first steamboat appeared on the Mississippi in 1811 and by 1820 steam navigation had achieved great results in reducing the time of the voyage up and down the river. But steamboat rates were high, and consequently the

³ Young, *Chautauqua County, New York*, 94.

⁴ Benton, in J. H. U. *Studies in Hist. and Pol. Science*, XXI, Nos. 1-2, p. 24.

⁵ F. A. Michaux, in Thwaites, *Early Western Travels*, III, 145, 158, 191, 240, 245, 247; Harris, *Journal*, 146.

flatboats, barges, keelboats, and a multitude of other craft continued to ply the western waters and to carry a large proportion of the farm products exported.⁶

After 1815 there was a noticeable increase in the demand of the southern market for the foodstuffs of the upper Mississippi and Ohio Valleys. Up to this time the sugar plantations of Louisiana and the West Indies had furnished the only outlet for western products. But after the end of the War of 1812 a new demand came from the cotton planters, who, abandoning the exhausted soils of the Atlantic seaboard, were rapidly opening up new lands with slave labor west of the mountains.⁷

"In 1822 three million dollars' worth of goods was estimated to have passed the Falls of the Ohio on the way to market, representing much of the surplus of the Ohio

TABLE 25.—Receipts of produce at New Orleans, 1822-1839.^a

[Source: U. S. Bureau of Statistics (Treasury Department), *Report on the Internal Commerce of the United States* (1887), pp. 195, 196, 200-202.]

	Average 1822-1824.	Average 1825-1829.	Average 1830-1834.	Average 1835-1839.
Bacon and hams.....lbs..	853,453	9,871,054	11,690,661	16,894,356
Pork .....do..	3,062,000	7,828,000	18,937,000	31,732,000
Lard .....do..	1,217,000	3,895,000	10,085,000	12,252,000
Beef, dried .....do..	^b 2,580,000 (12,900)	^b 7,763,914 (42,700)	77,200	73,400
Beef, pickled .....do..	495,467	1,026,420	1,541,480	^c 1,901,560
Hides .....do..	12,300	14,900	26,900	21,200
Butter .....do..	308,900	428,400	416,900	583,336
Flour .....bbls..	111,900	142,700	288,100	355,700
Corn .....bus..	94,638	168,400	403,300	888,200
Whisky .....bbls..	10,200	27,900	34,100	43,000
Tobacco .....hhds..	24,700	26,200	29,000	37,600
Potatoes .....bbls..	2,000	3,600	7,800	16,900
Hay .....bundles..	400	650	1,000	13,600

In preparing table 24 the following equivalents have been used: 1 hhd. (cask or tierce) of bacon, pork, or beef=1,000 lbs.; 1 bbl. bacon, pork, or beef=200 lbs.; 1 box, bacon=500 lbs.; 1 keg or firkin, butter or lard=56 lbs.; 1 bbl. butter or lard=224 lbs.; 1 hhd. butter or lard=1,120 lbs.; 1 bbl. cornmeal=4 bus. shelled corn; 1 bbl. corn on ear=1.7 bus. shelled corn; 1 sack corn, shelled=100 lbs.; 1 bushel corn, shelled=56 lbs.

^a Years beginning September 1.

^b The figures appear to be disproportionately large. It is probable that a mistake was made in reporting owing to a change in unit of weight from barrels to pounds. The figures given in parenthesis are probably nearer the true quantities.

^c The report for the years 1836 to 1839 combines barrels and tierces. In this average the tierce has been made equivalent to a barrel.

valley. Of this, pork amounted to \$1,000,000 in value; flour, to \$900,000; tobacco, to \$600,000; and whisky, to \$500,000. The inventory of products reveals the Mississippi valley as a vast colonial society, producing the raw materials of a simple and primitive agriculture."⁸

From statistics of receipts of produce at New Orleans, table 25 has been compiled, showing the increase in the shipments of the more important western

⁶ See Gephart, *Transportation in the Middle West*, 71, 96.

⁷ See Phillips, *American Negro Slavery*, ch. X.

⁸ Turner, in *Am. Hist. Review*, XI (1905-06), 324.

products down the river. Although these figures include some shipments from the lower Mississippi Valley, all the tobacco and most of the provisions came through the Ohio.

ORGANIZATION OF MARKETING.

A few well-to-do farmers made up their cargoes and sent them directly to New Orleans on their own responsibility, but most of the business was in the hands of the merchants. Fearon wrote (1817):

“There is a class of men throughout the western country called ‘merchants,’ who, in the summer and autumn months, collect flour, butter, cheese, pork, beef, whiskey, and every species of farming produce, which they send in flats and keel-boats to the New Orleans market. The demand created by this trade, added to a large domestic consumption, insures the most remote farmer a certain market. Some of these speculators have made large fortunes.”⁹

Farmers marketed their own products, according to Duden,¹⁰

“where merchants have not yet established themselves and are limited, almost entirely to shipments of grain and meats. The products of the small farms, to which class most of the farms here belong, hardly ever is so great but what the planter prefers to dispose of his produce in his own community. . . . In the central as well as in the northern states, where cereals constitute the basis of agriculture, most of the farmers dispose of their tobacco and cotton in their own neighborhood, even tho they ship their grain to foreign markets. The trade in wax, tallow, hides, furs, and minerals is always in the hands of merchants. The same is true of brandies, flour and many other things. The American does not sell directly to the consumer, unless he happens to have a store himself, the ordinary means of life, which are taken to the weekly market, excepted. If a person has something to sell he usually takes it to the storekeeper, who disposes of it for a commission, or buys it outright. Some farmers, for instance, make use of the bad weather, to make shoes, barrels or other things. All these things they take to the merchant to sell. This seems to be the most advantageous as also the most respectable way. It is but natural that such a method should lead to barter, with which the merchant usually makes a double profit.”

The business of the merchant comprehended a great variety of services which have now become specialized occupations. As storekeeper he sold drygoods and supplies to the farmer whom he financed, also, by long credits. He packed the farmer's pork and ground his flour, and packed it in barrels. He was also engaged in transportation, owning and operating flat-bottom and keel boats on the river.¹¹

An attempt to promote river trade by the association of farmers with merchants was made in 1803 by the organization of the Miami Exporting Company. This was also a banking institution with the privilege of issuing notes. The company did a prosperous business for a few years, but discontinued exporting in 1807, because of disagreement between the farmers and the merchants regarding the division of profits. Other companies were organized with similar purposes, but none existed long enough to appreciably influence marketing conditions.¹²

⁹ *Sketches of America*, 201.

¹⁰ *Report* (1824-27), in *Mo. Hist. Review*, XIII (1918), p. 273.

¹¹ Goodwin, in *Ohio Arch. and Hist. Quarterly*, XVI (1907), p. 333.

¹² Gephart, *Transportation in the Middle West*, 99.

DEFECTS OF THE NEW ORLEANS MARKET.

The New Orleans market was in many respects unsatisfactory.

"Produce would be brought into the local shipping points along the Ohio River and a wait of weeks was often necessary before the river would rise. The rise of the river frequently meant the saving of a year's labor, and when the flood stage came joy was unbounded. 'The Ohio River had risen twenty feet' writes an editor, 'and once more our boats are released.' These were flat-boats, keel-boats and other crafts which had been loaded with flour, pork, lard, whiskey and other Ohio products. New Orleans was for fifteen years after the settlement of the state in the possession of a foreign nation, which was almost continually hostile to the commercial interests of the Ohio Valley; and even after this obstacle to trade was removed in 1803, a quarter of a century elapsed before a canal was constructed around the falls at Louisville. Even when New Orleans was reached, it was often found to be an unsatisfactory market, for the hot and humid climate of the lower Mississippi caused much of the flour, wheat, corn, pork and other perishable products to spoil in transit. Many of these products were improperly prepared for carriage through a warm area to a distant market, since they had to be shipped when boats could be obtained and when the river permitted. There was a lack of capital at New Orleans and consequently a dearth of elevators, storage rooms, commercial houses, and other machinery for handling a large trade in domestic and foreign goods. Shipping facilities were also wanting, for steamers sailed irregularly. In consequence of these drawbacks the New Orleans market was alternately glutted and emptied, and prices fluctuated violently."¹³

PRICES OF FARM PRODUCTS IN THE WEST.

The following data from the diary of a western traveler¹⁴ indicate the general level of the price of farm products in Pittsburg, 1807. He wrote:

"There are two market days weekly, and the common prices of necessaries are,—good beef, from 2½ to 4 cents per lb; pork 3½, mutton 4, veal 3, venison 3 to 4, bacon 6 to 10, butter 10 to 18, cheese 8 to 12, hogs lard 8, fowls each 10 to 12, ducks 25, geese 33 to 37, turkies 40 to 75, flour \$1 75 to 2 50 per cwt. or from 3 50 to 4 50 per barrel, corn 33, potatoes 40, turnips 18, Indian meal 40 cents per bushel, onions a dollar, white beans a dollar, dried apples and peaches a dollar, and green 40 cents per bushel, eggs 10 to 18 cents per dozen, fresh fish 3 to 6 cents per lb., maple sugar, very good, made in the country, 10 to 12 cents a pound, whiskey 30 to 40 cents per gallon, peach brandy 75 to 80, beer 5 to 7 dollars a barrel, and cider 3 to 4, 700 country linen 40 cents, and tow cloth 33 cents per yard; but salt comes high, being generally 2½ dollars per bushel. . . ."

From other similar accounts¹⁵ we may conclude that the prices of the chief farm products in western cities about the years 1815 to 1820 were roughly as follows: Wheat 50 to 75 cents a bushel, occasionally as high as \$1; corn 33 to 50 cents, occasionally as low as 25; pork, \$2.50 to \$4 per cwt., occasionally \$5; beef, \$3.50 to \$5 per cwt.; bacon, 8 to 10 cents per pound; butter and cheese, 12½ to 20 cents; potatoes, 25 to 50 cents a bushel. A list of prices,

¹³ Gephart, *Transportation in the Middle West*, 95; see also Esarey, *Indiana*, 306; Faux, in Thwaites, *Early Western Travels*, XI, 179; XII, 18.

¹⁴ Cuming in Thwaites, *Early Western Travels*, IV, 247.

¹⁵ *Niles' Register*, IX (1815-16), p. 420; X (1816), p. 269; XI (1817), p. 410; Flagg, in *Illinois State Hist. Soc. Transactions* (1910), pp. 142, 153, 162, 166, 167; Ogg, *Fordham's Personal Narrative*, 118; Palmer, *Travels*, 83.

more carefully compiled than many, is given by Hulme¹⁶ for Zanesville, Ohio, 1818:

TABLE 26.—*Prices at Zanesville, Ohio, July, 1818.*
[Source: Hulme, in Thwaites, *Early Western Travels*, x, 74.]

	Dls.	Cts.	Dls.	Cts.
Flour (superfine) per barrel of 196 lb. from.....	5	0	to 5	75
Beef, per 100 lb.....	4	0	— 4	25
Pork (prime), per 100 lb.....	4	50	— 5	0
Salt, per bushel of 50 lb.....	2	25		
Potatoes, per bushel.....	0	25	— 0	31½
Turnips, ditto	0	20		
Wheat, ditto of 60 lb. to 66 lb.....	0	75		
Indian corn, ditto sheiled.....	0	33½	— 0	50
Oats, ditto	0	25	— 0	33½
Rye, ditto	0	50		
Barley, ditto	0	75		
Turkeys, of from 12 lb. to 20 lb. each.....	0	37½	— 0	50
Fowls	0	12½	— 0	18½
Live Hogs, per 100 lbs. live weight.....	3	0	— 5	0
Cows, (the best).....	18	0	— 25	0
Yoke of Oxen, ditto.....	50	0	— 75	0
Sheep	2	50		
Hay, per ton, delivered.....	9	0	— 10	0
Straw, fetch it and have it.				
Manure, ditto, ditto.				
Coals, per bushel, delivered.....	0	8		
Butter, per lb. avoirdupois.....	0	12½	— 0	18
Cheese, ditto, ditto.....	0	12½	— 0	25
Loaf Sugar	0	50		
Raw ditto	0	31½		
Domestic Raw ditto.....	0	18½		
Merino Wool, per lb. avoirdupois, washed.....	1	0		
Three-quarter Merino ditto.....	0	75		
Common Wool	0	50		

After 1820 prices tended to be lower. Wheat in Ohio about 1825 was considered high at 50 cents a bushel and 30 cents was the usual price secured by farmers in trade at country stores.¹⁷ Table 26a, based on data presented in a congressional debate, presents the trend of wheat prices in the years 1820 to 1840.

TABLE 26a.—*Wheat prices, eastern Ohio, 1820 to 1840.*

[Source: Speech of Congressman Weller, of Ohio, August 4, 1841, in *Congressional Globe and Appendix X* (1841), p. 501.]

Year.	Price per bushel.	Year.	Price per bushel.	Year.	Price per bushel.
1820	\$0.20	1827	\$0.50	1834	\$0.59
1821	0.31	1828	0.50	1835	0.83
1822	0.38½	1829	0.78	1836	1.12½
1823	0.38½	1830	0.50	1837	1.15
1824	0.42½	1831	0.50	1838	1.05
1825	0.38½	1832	0.65½	1839	0.84
1826	0.38	1833	0.59½	1840	0.50

¹⁶ In Thwaites, *Early Western Travels*, X, 74.

¹⁷ Howells, *Recollections*, 138.

In 1828 Flint¹⁸ stated that a fair average price for corn in quantities in the Cincinnati market had not exceeded, in the past three years, 12½ cents a bushel. Pork in quantities brought only 1½ cents a pound. In Indiana, wheat sold in the years 1830 to 1840 for from 30 to 50 cents a bushel and corn at from 10 to 12 cents.¹⁹ Peck gives the following prices for Illinois, 1836:

“Wheat, \$1.00 bush.; Oats, 25c. bush.; Horses, for farm work, \$50; Cows (in spring), \$7-15; Butter (summer), 10c. lb.; Cheese, 8 to 10c.; Pork: Bacon, 7-8c.; Hams, 8-10c.; Stock hogs, 60-100 lbs. alive, \$1-\$2 per head.”²⁰

EASTERN MARKETS FOR LIVESTOCK.

In the States of the Atlantic seaboard there was rapidly developing an industrial population in the years 1810-1840, and with it was created a home market for farm products. The access to this market was difficult, however, for land carriage for most farm products was prohibitively expensive. The farmer had one commodity, however, which could be made to transport itself to market, viz., livestock, cattle and swine. A beginning in eastward droving was remarked in 1802, by Michaux,²¹ who wrote:

“The number of horned cattle is very considerable in Kentucky; those who deal in them purchase them lean, and drive them in droves of from two to three hundred to Virginia, along the river Potomack, where they sell them to graziers, who fatten them in order to supply the markets of Baltimore and Philadelphia.”

A few years later, in 1804 or 1805, the first herd of cattle from the Scioto Valley, Ohio, was successfully driven across the mountains to Baltimore.²² From that time until about 1850 cattle-droving eastward was a well-recognized feature of Ohio Valley farming. Travelers crossing the mountains to the west regularly commented on the droves of cattle and hogs, and occasionally even horses and sheep, which they met on the way.²³ In 1810 it was estimated that 40,000 head of hogs were annually driven from Ohio to the Philadelphia, Baltimore, and other eastern markets.²⁴ The first herd of Western cattle ever brought to New York arrived in that city in June 1817, “as fresh,” according to a newspaper report, “as if just taken off one of our Long Island farms. When it is recollected that they have been driven nearly 1,000 miles, this fact will be considered a very remarkable one.”²⁵

Two grades of cattle were driven eastward: (1) stock or store cattle, and (2) cattle that had been fattened on corn. The former, 3-year old steers, grass fattened, were taken in the fall to eastern Pennsylvania and also to the Potomac Valley and sold to farmers to be fattened there for eastern markets. The corn-fed animals, partly raised in Ohio and partly in Indiana and Illinois

¹⁸ *Mississippi Valley*, I (1828 ed.), p. 227.

¹⁹ Conner, *Indiana Agriculture*, 5.

²⁰ *New Guide for Emigrants*, 275, 276, 281, 283, 284, 285.

²¹ F. A. Michaux, in Thwaites, *Early Western Travels*, III, 245.

²² U. S. Census of 1860, *Agriculture*, p. cxxx; Ohio State Board of Agriculture, *3d Annual Report* (1848), p. 162.

²³ Cuming, in Thwaites, *Early Western Travels*, IV, 136, 228; Melish, *Travels*, II, 51; Flint, Timothy, *Recollections*, 9; Flint, James, in Thwaites, *Early Western Travels*, IX, 80; Welby, *ibid.*, XII, 293.

²⁴ Kilbourn, *Ohio Gazetteer* (7th ed., 1821), p. 16.

²⁵ *New York Press*, quoted in De Voe, *Market Book*, 411. See also *Niles Register*, XII (1817), p. 287.

but fattened in Ohio, were driven more slowly across the mountains, arriving at eastern stockyards between April 15 and August 1.

There were three main droving routes: (1) the northern by way of Dunkirk, New York; (2) the middle by way of Pittsburg to Philadelphia; and (3) the southern, passing through Bedford, Pennsylvania, and ending in either Philadelphia or Baltimore.

“During the summer and autumn, along these lines of travel, so many drovers passed that an observer, a mile or more away, could know of the passing of stock, for far up in the air he could see long moving lines of rising dust. In the winter and early spring the clay pikes became almost impassable because of the depth of the mud. And worse than that, cattle naturally walk abreast of each other, and soldier-like they put their feet in the tracks of the one in front, and in this way great trenches were made across the highway, which when the clay dried became almost impassable for carriages and other vehicles. . . . Seldom were there less than one hundred cattle in a drove, and not often much over two hundred in the largest droves. When fat cattle were driven, it was not unusual to have the drove accompanied with as many or even more stock hogs. In such cases the hogs cost little in the way of grain, for they consumed the corn that the cattle wasted. When hogs were taken with cattle the journey took about a week longer. Drovers of horses would average twenty-two miles per day, stock cattle nine miles, fat cattle seven, and cattle with hogs, not quite so many miles per day. . . .”²⁶

Marketing conditions were bad. It required 40 or 50 days to reach the market, and within that time prices fluctuated widely.

“It was not uncommon for the drover to be met by speculators some three or four days’ journey from the market. These were men who were good judges of stock and they knew well how the market was supplied and how prices ruled. To a great extent they had the advantage of the drover, who did not have access to a daily market report, only as he might interview returning drovers.”²⁷

With the development of Cincinnati as a pork-packing center in the years 1835-1840, eastward droving of hogs declined. Cattle droving came to an end in the 50’s when the construction of trunk-line railroads deprived Ohio of the advantage of nearness to the eastern markets.

CATTLE GRAZING IN EASTERN OHIO.

The development of cattle fattening as a specialized industry in Ohio was a natural consequence of the opening of the eastern market for western livestock. Thousands of young cattle were purchased by Ohio graziers at the close of winter from the farmers of Indiana and Illinois, and even from Missouri, to be fattened for eastern droving. The rich bottom lands of the Scioto and other tributaries of the Ohio yielded better crops of corn than of wheat and thousands of acres of the former grain were raised for cattle fodder. The method of feeding, introduced in the Scioto valley by early settlers from the South Branch of the Potomac in Virginia, by its economy of labor was to a large extent responsible for the success of the industry. Elsewhere in the West, corn-fodder was scantily supplied to cattle, consisting merely of tops and blades laboriously gathered by hand. The Scioto farmers, however, fed the unhusked ears with the fodder from stacks in the field. The cattle were fed twice a day in open lots of 8 or 10 acres each, and followed

²⁶ King in Ohio Arch. and Hist. Soc. *Quarterly*, XVII (1908), p. 249.

²⁷ *Ibid.*, 252.

by hogs to clean up the neglected grain and ears.²⁸ The scale on which the industry was conducted is indicated by the size of the herds owned by individual farmers. According to the estimate of the *Ohio Farmer*²⁹ there were in Ohio, about the year 1835, 58 graziers whose herds in the aggregate amounted to 11,802 head. Herds of from 200 to 800 cattle were not uncommon and some were over 1,000.

A traveling contributor to the *New York Farmer*³⁰ wrote the following account of the operations of a farmer in the neighborhood of Chillicothe.

" Mr. G. R. purchased	
400 cattle, principally from Missouri, at \$10 each.....	\$4000 00
Labor to cultivate 150 acres of land, } the produce of which was fed to them. }	300 00
	\$4300 00
and sold them at his door seven months } after, at \$15 00 each, }	\$6000 00
leaving him a net profit on his cattle of.....	\$1700 00

" The profit on the store cattle and swine, fed on what was left by the others, he considers would pay all trouble;—That was the worst year he ever had, but mark the difference in the statement that follows. The same gentleman sold this spring, 480 cattle at \$30 each, amounted to \$14,400 00, from which deduct expense of driving to market at \$7 each, \$3,360 00 and the first cost \$10 each, \$4,800, leaves him \$6,240 for one years produce raised on his farm, whence he has profit on his store cattle and hogs, enough to pay all expenses. Now you may, perhaps, enquire what land is worth here? I answer, a good farm, with stonehouse and other improvements, in the vicinity of Chillicothe, sold for \$10 per acre, and good land, without buildings, sells from \$1 to \$5."

Specialization in the fattening of swine on corn lands had begun by 1835 in the upper Wabash Valley. Stock purchased from the raisers were turned into a field of ungathered corn in the middle of September and into another as soon as that was eaten off clean, until at the end of three months they were considered ready for the southern markets. Some farmers fattened as many as 1,000 swine in a year.³¹

IMPORTATION OF IMPROVED ENGLISH CATTLE.

The improvement of the breed of Ohio cattle by the importation of English stock had received considerable attention before 1840. The first English cattle to cross the mountains were those taken by members of the Patton family from Virginia to Kentucky about the year 1795. A few years later representatives of this stock were taken into Ohio, where they soon gained a wide reputation. They were large animals, coarse and rough, with long, widespread horns, of no well-defined breed³² and on account of their great growth were slow in coming to maturity. By crossing these animals, and later importations of the same type, on the native stock a considerable improvement was effected.

²⁸ U. S. Census of 1860, *Agriculture*, p. cxxx; Peck, *New Guide for Emigrants*, 109, 283.

²⁹ Quoted in *The Cultivator*, III (1836-37), p. 32. See also *Diary of a Naturalist* (Benjamin Silliman) in *American Journal of Science*, XXV (1834), pp. 235, 257.

³⁰ III (1830), p. 273.

³¹ Ellsworth, *Valley of the Upper Wabash*, 39, 42.

³² This description is from U. S. Census of 1860, *Agriculture*, p. cxxxii, and Beatty, *Essays on Practical Agriculture*, 33. Some later writers hold that the original importations were Shorthorns. See Plumb, *Types and Breeds of Farm Animals*, 183.

In 1817 the first importations of pure-blood English stock, began to arrive in Kentucky, and among them came the first of the famous "Shorthorns."³³

"The short horns proved a valuable acquisition to the existing stock of the country, though the quality of their beef was perhaps no better than the Patton or Miller stock, nor were the cows better milkers, but their early maturity, and aptitude to fatten were qualities peculiarly desirable at the time, had they been properly appreciated and improved upon by the breeders generally."³⁴

Although the new breeds were known in Indiana and Ohio as well as in Kentucky there was little general interest among farmers in stock improvement by importation. English cattle were regarded as too "fancy" for the average farmer.

The organization in 1834 of the Ohio Company for Importing English Cattle marked the beginning of a new stage in the betterment of western livestock. Heretofore, importations had been sporadic, depending on the whims and financial means of individual gentlemen farmers. The new company, with a capital of \$9,200 subscribed in shares of \$100 each, sent agents abroad who selected and brought to Ohio 19 head of thoroughbred Shorthorn, or Improved Durham, stock from the herds of the most celebrated breeders. The cattle were kept together under the care of an agent and their number was increased by later importation until 1836 when they were sold at auction and scattered extensively over Ohio. In 1837 another large importation was made and sold by the same methods. The results on the breed of Ohio cattle were unmistakable.³⁵

DIFFICULTIES OF OVERLAND TRANSPORTATION.

The cheapening of transportation costs by the improvement of roads and by the building of canals was responsible for the beginning of a new era in western agriculture. Rivers were the natural means of communication, but roads were necessary to bring products of inland farms to the waterside. The first roads were merely trails, passable only on horseback. A considerable amount of money was invested in the years 1800 to 1840 in the improvement of these trails and in making new roads, but from the descriptions of the highways thus produced we must conclude that they afforded little encouragement to farmers. The so-called roads were merely narrow avenues through the woods from which the trees had been felled and rolled away, leaving the brushwood and stumps a foot or a foot and a half high. They retained their natural clay foundation without artificial surfacing of any kind. Little attention was paid to grade, and many of them led over steep hills. A trip over such thoroughfares in a light vehicle was no small adventure. For loaded wagons during the greater part of the year they were impassable, and even at their best hauling over them was expensive.³⁶

³³ *American Farmer*, II (1820-21), p. 313; IV (1822), pp. 223, 280.

³⁴ U. S. Census of 1860, *Agriculture*, p. cxxxii.

³⁵ Ohio State Bd. Agric., *12th Annual Report* (1857), p. 301; Flint, in Maine Bd. Agric., *19th Annual Report* (1874), p. 140.

³⁶ The construction of turnpikes was not seriously undertaken until after 1830, and then only in the more densely settled districts. Descriptions of western roads about 1820 are given by Welby in Thwaites, *Early Western Travels*, XII, 241; and by Flint, *Ibid.*, IX, 253. See also Welker, in Western Reserve Hist. Soc., *Tracts*, IV, No. 86, p. 53; Smith, *Indiana*, I, 344; Gephart, *Transportation in the Middle West*, 51, 129-134, 141; Kilbourn, *Ohio Gazetteer* (11th ed., 1833), p. xxvi.

"With such roads it was exceedingly difficult to market grain and other produce. With ox-teams it required three days to go twenty-five miles to market and return. Unless the roads were unusually good, it required two yoke of oxen to draw what would now be called a small load. Counting time, it was almost worth a load of grain to market it." ³⁷

Faux estimated that in Indiana, in 1818, the usual price for land carriage was 50 cents for 100 pounds for every 20 miles, sometimes more, but never less.³⁸ Flower ³⁹ wrote that land carriage to the Wabash River, a distance of 9 miles, cost 16 cents per 100 pounds. At such rates corn could not stand the expense of moving 20 miles, even though produced at no cost, and wheat could not be profitably transported by land more than 50 or 75 miles.

OPENING OF THE ERIE CANAL CAUSES WESTWARD SHIFT IN WHEAT PRODUCTION.

The opening of the Erie Canal in 1825 marked the beginning of a new era in western trade. The reduction in transportation costs thus accomplished was eventually to enable the farmers of the Ohio Valley to ship great quantities of grain and provisions to eastern markets. It did not immediately turn the current of western farm products from the south to the east, for until 1850 the trade down the Mississippi increased more rapidly than the trade via the canal. In the years before 1840 its influence was confined chiefly to the wheat farmers of western New York and of the lake shore of northern Ohio. In western New York wheat became the chief crop and the Genesee Country became our chief wheat-growing section.

"Previous to the construction of the canal the cost of transportation from Lake Erie to tide-water was such as nearly to prevent all movement of merchandise. . . . The expense of transportation from Buffalo to New York was stated at \$100 per ton, and the ordinary length of passage *twenty days*; so that, upon the very route through which the heaviest and cheapest products of the West are now sent to market, the cost of transportation equalled nearly *three* times the market value of wheat in New York; *six* times the value of corn; *twelve* times the value of oats; and far exceeded the value of most kinds of cured provisions." ⁴⁰

Under the stimulus of the market, farmers in Onondaga County made notable progress in better methods of wheat cultivation.

"They know, better than they did, how to prepare for this crop; which is done, in many instances, by less expensive modes of culture. They are more careful than they were to sow clean and good seed. Instead of such meslin crops of chess, cockle, rye, smut and wheat, all intermixed, as grew here under the slovenly husbandry of former years, the wheat-fields of this county, with but few exceptions, are now expected to produce crops exhibiting a very cleanly and neat appearance. The smut of wheat is almost banished from the county." ⁴¹

The scale of farming operations in this region also showed considerable enlargement, crops of 1,500 to 3,000 and even of 6,000 bushels being gathered by some farmers.⁴²

In northern Ohio the price of wheat rose rapidly after 1825, but it was not until the completion in 1832 of canals connecting the Great Lakes with the Ohio

³⁷ Adams, in Mich. Pol. Sci. Assn. *Publications*, III (1899), No. 7, p. 16.

³⁸ In Thwaites, *Early Western Travels*, XI, 291.

³⁹ *Ibid.*, X, 142.

⁴⁰ Andrews, *Report on Colonial and Lake Trade*, 234.

⁴¹ N. Y. Bd. Agric. *Memoirs*, III (1826), p. 89.

⁴² N. Y. *Farmer*, VI (1833), p. 337.

River that the advantages of cheap water transportation were made available to farmers in the interior. As early as 1830, 200,000 bushels of Ohio wheat were milled at Rochester. The flour was considered of a lower quality than that of western New York. It brought a lower price at the mills and was graded lower when inspected for export.⁴³ In 1835 Ohio was the only grain-exporting territory on the lakes. In that year, 86,223 barrels of flour and 1,354,995 bushels of wheat, all Ohio products, passed through the Erie Canal. Before 1840 shipments of wheat had been made from both the western and eastern shores of Lake Michigan.⁴⁴

Table 27⁴⁵ showing the principal articles shipped from Buffalo by canal in 1835 and in 1840 indicates the character and extent of the eastward ship-

TABLE 27.—Articles shipped eastward from Buffalo by canal.

[Source: Andrews, *Report on Colonial and Lake Trade*, 85.]

Articles.	1835.	1840.
Flour .....barrels..	86,233	633,700
Wheat .....bushels..	95,071	881,192
Corn .....do....	14,579	47,885
Provisions .....barrels..	6,502	25,070
Ashes .....do....	4,419	7,008
Staves .....number..	2,565,272	22,410,660
Wool .....pounds..	140,911	107,794
Butter }	1,030,632	3,422,687
Cheese }		
Lard }		

ments of western produce. It does not include the entire exports of Ohio on the lakes, for in addition to the canal traffic considerable quantities of pork and flour were shipped to Montreal and Quebec.⁴⁶

OTHER COMMODITIES PRODUCED FOR SALE—CHEESE, TOBACCO AND WOOL.

The shipments of cheese shown in table 27 were the product of the New England settlers on the Western Reserve in northern Ohio. Very soon after settlements had been made in this region cheese was sold in Pittsburg. Some farmers made from 1 to 2 tons in a season.⁴⁷ About 1820, Ohio cheese was first shipped down the river to southern markets.⁴⁸

The cultivation of yellow-leaf tobacco as a cash crop began about 1825, in the hilly region of Ohio centering around Licking, Fairfield, Perry, and Muskingum counties.

“For two or three years the people in and near this neighborhood had been raising tobacco of a particular variety, which proved a profitable business, and helped materially

⁴³ *N. Y. Farmer*, III (1830), p. 217; IV (1831), pp. 109, 203.

⁴⁴ U. S. Census of 1860, *Agriculture*, p. cxlvi.

⁴⁵ From Andrews, *Report on Colonial and Lake Trade*, 85. It will be noted that the figures for wheat shipments are considerably less than those given in the previous paragraph. Andrews admits that his figures are not entirely accurate.

⁴⁶ Atwater, *Ohio*, 310.

⁴⁷ Cuming, in Thwaites, *Early Western Travels*, IV, 91 and note.

⁴⁸ Burkett, *Agriculture of Ohio*, 179.

to supply the farmers with articles they needed, and to pay for their lands, for the crop would mostly bring cash. The kind of tobacco raised was a variety that had been raised in Maryland, and was known as light or yellow tobacco. It differed from the Virginia crop in being a lighter and finer plant, and being cured by the heat of fire, instead of the air of a shed, as was the heavier kind. It was left for the leaf to ripen or turn yellow upon the stalk, when it was gathered and dried over great fires in a close house, so constructed as to confine the heat around the leaves until they were thoroughly cured."⁴⁹

For a few years prices were high, ranging from \$6 to \$40 per hundred-weight, and successful raisers cleared large profits. A tobacco mania prevailed; tobacco was regarded as a sure road to wealth and other crops were neglected. Such quantities of Ohio leaf were received in Baltimore as to make Maryland growers apprehensive of the new western competition. Most of the demand for the yellow leaf came from Europe, where it was consumed chiefly by the more wealthy classes. Their demand proved inelastic, and within a few years the market was so overstocked that prices fell to between \$2 and \$3 per hundredweight, resulting in temporary reduction of the crop but not in its complete abandonment.⁵⁰

Commercial wool-growing had made but little progress in the West before 1840. Although sheep had increased rapidly, they were still largely kept for the supply of domestic textiles. A few woolen factories had been established, notably those at Steubenville, Ohio, creating a demand for fine wool, and in response to this demand Merino sheep had been brought from the East to Ohio.⁵¹ A few flocks of Merinos were kept in Indiana and Illinois before 1820.⁵² Small shipments of wool eastward across the Alleghenies began about 1825. From Washington County, Pennsylvania, out of a total clip of over 400,000 pounds, it was estimated that three-fourths would be consumed in household manufactures, and of the remaining 100,000 pounds two-thirds would be used in western factories and one-third sent eastward.⁵³ In this county wool was beginning to compete with wheat as a cash product and in western New York the substitution of sheep for cattle was being discussed.⁵⁴

The small proportions which the shipments of western wool had attained before 1840 is indicated by the statistics of the clearances at Buffalo over the Erie Canal, which carried to eastern markets almost all the wool produced in the Ohio Valley. In the years 1834-1840 these shipments were:⁵⁵

	lbs.		lbs.
1834	186,000	1838	109,000
1836	252,000	1839	131,000
1837	39,000	1840	170,000

⁴⁹ Howells, *Recollections*, 131.

⁵⁰ *American Farmer*, VII (1825), pp. 348, 411; VIII (1826), pp. 224, 336, 397; *American Journal of Science*, XXV (1834), p. 232; Atwater, *Ohio*, 88.

⁵¹ *Niles Register*, VI (1813-14), pp. 209, 210; VII (1814-15), p. 350.

⁵² Faux, in Thwaites, *Early Western Travels*, XI, 250; Hall, *Statistics of the West*, 147.

⁵³ *American Farmer*, VII (1825), p. 138; See also *Ibid.*, X (1828), p. 286, and Hazard, *Register of Pennsylvania*, I, 142.

⁵⁴ N. Y. Bd. Agric. *Memoirs*, III (1826), p. 94, 95.

⁵⁵ From *Niles Register*, LXIX (1835-36), p. 54.

CHAPTER XIV.—THE ORGANIZATION AND EDUCATION OF FARMERS.

THE SPIRIT OF IMPROVEMENT.

The closing decades of the eighteenth century gave indications of the beginning of a new epoch in northern agriculture. We have already noted significant improvements, such as the introduction of the use of gypsum, the rapid increase in the sowing of clover and other grasses, and Jefferson's experiments with an improved plough. Although none of these changes had immediately a widespread influence on agricultural production, yet taken together with the organization of agricultural societies and the beginning of American agricultural literature, they indicated the rise of a new and enthusiastic interest in agricultural improvement.

The origin of the new spirit in agriculture seems allied to the revolutionary political changes which were taking place in the years 1775 to 1790. The successful attainment of American independence in 1783 and the establishment in 1789 of a new national government, after 6 critical years of anarchy and economic depression, were accomplishments that stirred men's minds with patriotic pride. They were proud of their new country and looked about for something further to do to make it happy and prosperous. Washington, Jefferson, and many others were familiar, by correspondence or by personal observation, with the revolutionary changes which were under way in the agriculture of England. Contrasting European progress with the stagnant condition of agriculture at home, they thought they saw a great opportunity for constructive service before them. To popularize the knowledge of the new farming in America seemed an eminently worthy task.

THE FIRST AGRICULTURAL SOCIETIES.

The agencies selected for this work were agricultural societies, in imitation very probably of those recently organized in England. Beginning with the formation in 1785 of the Philadelphia Society for Promoting Agriculture, societies were organized before 1800 in Charlestown, South Carolina, Hallowell, Maine, New York City, Boston, New Haven, and in Middlesex County, Massachusetts.¹ The nature of these societies, their purposes, and program are revealed in their articles of association. They were not intended to be clubs of practical working farmers who might aid each other by the exchange of facts and ideas from experience, but rather groups of men of all professions who were to receive, adapt, and disseminate the knowledge of the prog-

¹ A society "mainly for improving agriculture," but embracing other industries also in its interests, had been organized in New York as early as 1763, but I have found no record of its activities. See Furman, *Long Island Antiquities*, 91.

ress accomplished in other countries. So the preface to the *Laws and Regulations of the Massachusetts Society for Promoting Agriculture*² reads:

"One great object of this Society will be, to obtain and publish an account of the improvements of other countries, and to procure models of the machines in which they excel. It will attend to whatever relates to rural affairs, and especially to promote an increase of the products of our lands, To encourage the utmost attention to these objects, the Society will, from time to time, offer such premiums as their funds will admit. They consider agriculture in its various branches and connexions as highly interesting to all mankind. The wealth and importance of the community, is so intimately connected with, and dependent on the extent and success of agriculture, that every one who is desirous of advancing the happiness, prosperity, and dignity of his country, its commerce, and convenient subsistence of individuals, will lend his aid to this most useful institution."

The appeal of the society organized in Philadelphia in 1785 is equally broad. Here we read:³

"THE PHILADELPHIA SOCIETY FOR PROMOTING AGRICULTURE, was formed by some citizens, only a few of whom were actually engaged in husbandry, but who were convinced of its necessity; and of the assistance which such an association, properly attended to, would afford to the interests of agriculture. . . . Many citizens have a mistaken idea, that their not being *agriculturists*, disqualifies them from becoming useful members of our Society. . . . The interests of *Commerce, Arts, and Manufacturers*, form, with *Agriculture*, an indissoluble union; to which citizens of every class and calling, have it amply in their power to contribute."

CHARACTER OF THEIR MEMBERSHIP.

These appeals were answered in the spirit in which they were issued. An examination of the early membership of the societies shows that they were composed of men in whose lives agriculture was only one of many interests, and often the least important of all. There were in the Massachusetts society men of legal education, who had become prominent in political life, such as Samuel Adams, James Sullivan, then attorney-general of the state and later governor, General Joseph Lincoln, then collector of the port of Boston, Christopher Gore, John Lowell, and Jonathan Mason, all lawyers and active in politics and government. Besides these there were merchants, such as Stephen Higginson, Charles Vaughan, and Azor Orne. We find also representatives of the two other professions, ministers and doctors, who, blessed with an outlook on the affairs of the community beyond their immediate duties, turned their attention to improvements in agriculture. Such were the Rev. Manasseh Cutler and Cotton Tufts, the physician.

The practical farmers may have formed a considerable element in the membership of the Kennebec and the Middlesex Societies, but in them, as well as in the city groups, initiative and direction came from the professional and business men. Their interest in agriculture, although no doubt genuine, was nevertheless far different in nature and in intensity from that of the inland farmer, who was toiling day in and day out on his 100 acres, endeavoring to make a living for himself and his family. The point of view of the "literary"

² pp. iii, iv.

³ Philadelphia Society for Promoting Agriculture, *Memoirs*, I (1815), pp. iii, v (note).

agriculturalist was expressed by General (James?) Warren. In the *American Museum* he wrote: ⁴

"Agriculture has long been a favourite object with me. In a philosophic view, it is great and extensive; in a political view, it is important, and perhaps the only firm and stable foundation of greatness. As a profession, it strengthens the mind, without enervating the body. In morals, it tends to increase virtue, without introducing vice. In religion, it naturally inspires piety, devotion, and a dependence on providence, without a tincture of infidelity. It is a rational and agreeable amusement to a man of leisure, and a boundless source of contemplation and activity, to the industrious."

WHAT THEY ACCOMPLISHED.

The "literary" or "learned" agricultural societies were pioneers in the great task of agricultural education. In their *Memoirs* and *Transactions* they put before the public periodically an account of the best agricultural practice abroad, as well as the results of experiments in scientific agriculture by their members in this country. The work was carefully and well done. The *Memoirs* of the Philadelphia Society comprise 5 octavo volumes, issued at irregular intervals over a period of 18 years (1808 to 1826). The *Massachusetts Agricultural Repository and Journal*, published by the Massachusetts Society for Promoting Agriculture, makes up 10 volumes with publication dates ranging from 1798 to 1832. Taken together with the *Transactions* of the New York Society for the Promotion of the Useful Arts (4 vols., 1801 to 1819), they form a body of scientific literature which, judged by the state of knowledge of the time, was very creditable. But as far as reaching the "dirt farmer" and influencing his practice these publications were failures. The working farmer was not prepared to receive his education in the form of treatises and pamphlets.

"The improvements proposed fell almost dead upon the people, who rejected 'book farming' as impertinent and useless, and knew as little of the chemistry of agriculture as of the problems of astronomy."⁵

Besides publishing memoirs and transactions, the early societies offered substantial premiums for the discovery and description of methods of destroying insect pests, for the raising of grasses and trees from seeds, and for new methods of soil improvement. But here again competition was limited, by the very nature of the case, to a small number of educated persons with leisure for scientific investigation. Often the premium money remained unclaimed in the societies' treasuries. The Committee on Agricultural Experiments of the Massachusetts society reported in 1818: ⁶

"With respect to some of the objects to which the public attention is called, under the head of agricultural experiments, it must not be expected, that our practical farmers, generally, will contend for them at present. What has been almost wholly untried or requires uncommon care, should first be attempted and proved profitable and well suited to the climate, or otherwise, by the few who can best afford, and ought not to regard, the necessary time and expense."

Some of the papers published by the agricultural societies were reprinted in pamphlet form. Of these the most widely circulated were Richard Peters's *Agricultural Inquiries on Plaster of Paris* (1797) and Livingston's *Essay on*

⁴ II (1787), p. 344.

⁵ Flint, in Kettell, *Eighty Years' Progress*, I, 25.

⁶ *Mass. Agric. Repository*, V (1818-19), p. 254.

Sheep (1809). The interest of educated people in agricultural improvement was responsible for the publication of a number of treatises and handbooks on farming in the years after the close of the Revolution, in which an attempt was made to describe the best English practice, occasionally with suggestions for its adaptation to American conditions.⁷

ELKANAH WATSON AND THE BERKSHIRE AGRICULTURAL SOCIETY.

In 1807 Elkanah Watson exhibited in the public square at Pittsfield, Massachusetts, two Merino sheep, thus founding the cattle show or fair, an institution which was destined to accomplish much for American agriculture. Watson was a well-to-do New Englander, who after accumulating a competency in commercial enterprises and having traveled extensively in Europe, bought an estate near Pittsfield and "retired from the city in pursuit of rural occupations and felicity." Through his friendship with Chancellor Livingston of New York and Colonel David Humphreys of Connecticut, he had become interested in their efforts to improve the quality of American wool by the importation of Spanish Merinoes. His exhibition seems to have been merely an attempt to interest his neighbors in the improvement of their flocks. With the same purpose he brought to his farm a pair of improved swine and a bull of English stock, whose merits he diligently advertised in the local press. A few years later, in 1810, he persuaded 25 of his neighbors to join him in an exhibition of livestock on the village green. The show was a success and Watson proceeded to make it an annual event by the organization of the exhibitors and other Pittsfield farmers into the Berkshire Agricultural Society. In its organization and methods the Berkshire society furnished a striking contrast to the older, or literary, societies. It proved so successful that it served as a model for numerous county societies all over the northern States between 1815 and 1840.

Watson saw the failure of the older societies in their attempts to educate the working farmer by their publications and premiums. With a keen insight into human nature he determined to approach the farmer through his heart rather than his head. If he could once "seize upon the farmer's heart" and excite a spirit of competition and personal ambition, then the way might be prepared for books and science as auxiliaries. The cattle show was therefore selected as the chief feature of the new society. Cattle shows or fairs were not an original idea of Watson's. They were utilized as agencies for agricultural improvement in England and France in the late eighteenth century and had been visited by many Americans, perhaps including Watson, on European travels. Nor is it entirely clear that he was the first to introduce the cattle show into this country,⁸ but the fact is certain that he deserves the credit for making it, in combination with the society of working farmers, a successful agency for agricultural progress in this country.

⁷ See Bibliography, p. 466.

⁸ "Before the Revolution, regular Cattle Fairs were held in the town of Hardwick under the patronage of Timothy Ruggles, one of the most distinguished men of our county in former times." *National Aegis*, Worcester, Massachusetts, quoted in *New England Farmer*, VII (1829), p. 136. I have been unable to find any evidence to confirm this statement.

With great skill Watson enlisted the aid of the farmers' wives and of the local clergymen. The exhibition of farm products and of domestic manufactures became the central feature in an elaborate program, which included a street parade, a public meeting in the village church with a prayer, an address, singing and, to end the festivities, an agricultural ball in the evening. The new organization, although established on a sound psychological basis, had a hard struggle to survive in its early years. Its organizer was met with indifference and even by ridicule by his neighbors. The financing of the annual shows proved to be a difficult task. Annual memberships at \$1 per year did not yield enough to cover the cost of the premiums, and deficits were paid by Watson and some of his Boston friends. In 1814, Watson resigned as president of the society, much discouraged at its apparent failure.⁹

RAPID SPREAD OF SOCIETIES ON THE BERKSHIRE PLAIN.

Meanwhile a number of new agricultural societies had sprung up. In Windham county, Connecticut, a society was organized in 1809. In Pennsylvania, societies were in existence in Bucks and Luzerne Counties in 1810, and both of them held cattle shows in 1811. In New Hampshire societies were organized in Hillsborough (1812) and in Rockingham County (1814). In Massachusetts, a society was organized (1811) comprising farmers in a number of towns in Worcester County, and by 1815 there were in that state at least 15 "town" societies in existence.¹⁰ After 1815 the movement spread rapidly until, by 1820, according to Watson's claim, agricultural societies on the Berkshire plain were to be found in all the New England States except Rhode Island, and in all the counties of those States, in Pennsylvania, Maryland, Virginia, and North Carolina, and even in the newer states of Ohio and Illinois.¹¹ In New York, where Watson had been especially active in the work of propaganda and organization, societies had been formed in all but 6 of the 58 counties.¹² In October 1819, Watson estimated that before the end of that month there would be in operation in the United States at least 100 societies.¹³ A typical instance of the swiftness with which the new societies were organized is found in the case of Bath, Steuben County, New York. The farmers of the township were considering the organization of a society and had arranged for Watson to come and address them. On his arrival he was conducted by the local clergyman to the court-house. The court adjourned and the building was soon filled with the townsfolk, including ladies in the gallery. A prayer was offered which "softened the hearts of the audience." Watson then made an address, and within an hour sufficient funds were subscribed to get the State bounty and the society was launched.¹⁴

⁹ The facts regarding Watson's life and work are taken from his *Memoirs*, edited by his son, W. C. Watson, and from his own *History of the Rise of Modern Agricultural Societies*.

¹⁰ Larned, *Windham County, Conn.*, II, 449; Penn. Bd. Agric. *Annual Report* (1880), p. 229; Penn. Sec'y of Internal Affairs, 3d *Annual Report* (1874-75), Part III, 103; N. H. State Agric. Soc. *Transactions*, 1850, 1851, 1852, pp. 14-29; *Mass. Agric. Repository*, III (1815), p. 80.

¹¹ Watson, *History of the Rise of Modern Agricultural Societies*, 180.

¹² *Ibid.*, 163.

¹³ *Ploughboy*, I (1819-20), p. 205.

¹⁴ *Rise of Modern Agricultural Societies*, 164.

THE POLICY OF STATE AID.

The allotment of State funds to county societies was largely responsible for their rapid extension in the years from 1817 to 1825. State aid to agriculture was not a new thing in the nineteenth century. We have already noted the offering of bounties on a number of products, such as hemp, silk, and wool, by eighteenth century legislatures.¹⁵ In Massachusetts, the Society for Promoting Agriculture had been the recipient of State aid since its founding in 1792, but New Hampshire was the first State to extend aid to the newly formed county societies. In 1817 the legislature of that State granted \$100 to each of two county societies. The appropriation was increased in 1818 and divided among 5 societies.¹⁶ Massachusetts and New York both embarked on a liberal program of State aid in 1819. The former offered \$200 annually to every society which should raise and invest a fund of \$1000 and a proportional sum for greater investments up to \$600 per year. Under this act and its amendments, the agricultural societies of Massachusetts received, in the years 1819 to 1845, \$115,800 from the State treasury.¹⁷

The legislature of New York (act of 7 April, 1819) appropriated \$10,000 a year for 2 years, later extended to 4 years, "for the promotion of agriculture and family domestic manufactures." Quotas ranging from \$75 to \$500 were assigned to the various counties, according to their population. The law provided that the amounts granted to the counties should be equal to the funds raised by their members, but not in excess of their quotas. The funds of the societies were to be expended for granting premiums at their annual fairs.

In the years 1819 to 1825 the funds available for the aid of agricultural societies in New York amounted to over \$60,000, but of this less than \$43,000 was actually paid out, the balance remaining unclaimed because of the failure of the societies in some counties to raise funds of their own in compliance with the terms of the law.¹⁸ An interesting feature of the New York law, which was found also in the New Hampshire law of 1820, was the establishment of a State board of agriculture to be composed of the presidents of the county agricultural societies or delegates chosen in their stead. The chief duty of this board was the publication of an annual volume of essays and reports.¹⁹ Thus the ideal of the older "literary" societies was to be engrafted on the newer county organization. In Pennsylvania a State agricultural society, incorporated in 1823, with State aid, performed much the same duties as the State boards.

THE CLIMAX OF RURAL ORGANIZATION.

The climax of rural organization was reached between the years 1820 and 1825. In 1822 the repeal of State aid in New Hampshire was followed in a few years by the disappearance of all its societies. In New York the with-

¹⁵ See p. 100 and references there given.

¹⁶ N. H. State Agric. Soc. *Transactions*, 1850, 1851, 1852, pp. 14-29.

¹⁷ Mass. Sec'y of the Commonwealth, *Returns of the Agricultural Societies* (1845), p. xi.

¹⁸ N. Y. (State) *Senate Journal*, 49th Session, Jan. 1826, pp. 176-183.

¹⁹ N. Y. Bd. Agric., *Memoirs*, 3 vols. (1821 to 1826), I (1821), p. vii; N. H. State Bd. Agric., *N. H. Agricultural Repository*, No. 1 (1822), pp. 7-9; Penn. Agric. Soc., *Memoirs*, I (1824), pp. xi-xv.

drawal of State funds was followed by the wholesale collapse of the movement, so that by 1830 only one county, Jefferson, still supported an agricultural society.²⁰ In Connecticut and in Pennsylvania only a few societies survived after 1825. State aid in Massachusetts was probably largely responsible for the continued existence of a number of county societies, but even in that State no new societies were organized between 1823 and 1839.²¹ West of the Alleghenies, in Ohio, the movement gave signs of continued life in the organization of 6 counties in the years 1819 to 1833. By the act of February 25, 1833, State funds were made available with the result that societies were founded in 15 counties between that date and 1840.²² In Maine, a State which like Ohio was in this period one of the newer agricultural regions, at least two societies had maintained a continuous existence from 1818 to 1832. In the latter year a policy of State aid was inaugurated, resulting in the organization of 6 counties before 1840.²³ A revival of interest in agricultural societies was evident in a few counties in New York State in the closing years of the decade 1830-1840, but in general the movement remained at low ebb throughout the older States.

THE CAUSES OF THE RISE AND DECLINE OF COUNTY SOCIETIES.

The spectacular rise and decline of county agricultural societies in this period should be related to the great variety of "reform" movements which were in the air at the time. The facility with which the Americans organized for all sorts of purposes was remarked by De Tocqueville.²⁴ In 1840 he wrote:

"Americans of all ages, all conditions, and all dispositions, constantly form associations. They have not only commercial and manufacturing companies, in which all take part, but associations of a thousand other kinds,—religious, moral, serious, futile, extensive or restricted, enormous or diminutive. The Americans make associations to give entertainments, to found establishments for education, to build inns, to construct churches, to diffuse books, to send missionaries to the antipodes; and in this manner they found hospitals, prisons, and schools. If it be proposed to advance some truth, or to foster some feeling by the encouragement of a great example, they form a society. Wherever, at the head of some new undertaking, you see the Government in France, or a man of rank in England, in the United States you will be sure to find an association."

In the case of the agricultural societies the natural tendency toward organization was stimulated by the policy of State aid, and consequently the movement spread far ahead of the real need for it, i. e., ahead of the appreciation and desire for organization on the part of practical farmers. As in the case of later associations of farmers, such as the Patrons of Husbandry, those who rushed to join entertained exaggerated hopes of the benefits they would receive. When the first flush of enthusiasm had faded and none of their vague anticipations had materialized, their support wavered. When eventually the support from the State treasuries was withdrawn the whole flimsy fabric collapsed.

²⁰ *N. Y. Farmer*, III (1830), p. 295.

²¹ Mass. Sec'y of the Commonwealth, *Returns of the Agricultural Societies* (1845), p. x.

²² Ohio State Bd. Agric. *Brief History*, 9-24.

²³ Maine Bd. of Agric. *1st Annual report* (1st ed., 1856), pp. 15-17.

²⁴ *Democracy in America*, III, 220. See also Turner, *Rise of the New West*, 6.

RELATION OF RURAL ORGANIZATION TO GENERAL INDUSTRIAL CONDITIONS.

The relation of the earliest movement for rural organization to general industrial conditions is significant. Although begun in a period of rising prices, the greatest activity of the county societies, as of later agrarian movements, came in a period of rapidly falling prices. Farmers who were still in a self-sufficient economy were not greatly affected by price changes, but to those who were at this time taking the first steps in the transition to commercial agriculture, the decline in the prices of beef and pork, butter and cheese, wool, wheat, and corn brought distress. With vague hopes they turned for relief to the county societies. But in the latter's campaign for better farming the

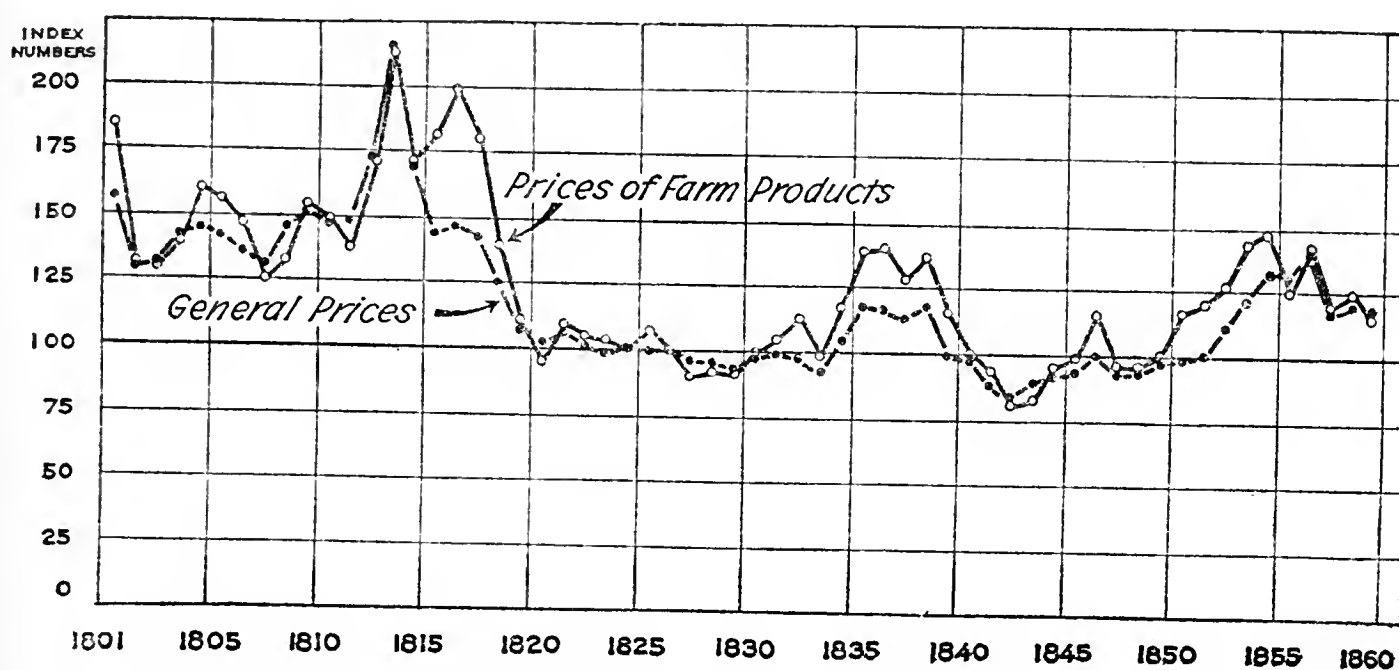


FIG. 9.—Prices of farm products and general prices 1801-1860.

The index number of general prices for the years 1801 to 1824 is taken from Hansen's article in *American Statistical Association, Quarterly Publications*, XIV (1914-15), p. 808. The figure for 1809 I have supplied independently, using identical data and methods. For the years 1825-1863 the index number is based on the yearly average of New York wholesale prices of 74 commodities quoted in the *Report of the Secretary of the Treasury for 1863*. A weighted index number with base 1860 computed from this material was published by Juergens in *American Statistical Association, Quarterly Publications*, XII (1910-11), pp. 544-557.

In computing the index of farm products for 1801-1824 the prices of the following commodities were used: beef, beans, bacon, butter, cheese, flaxseed, flour, barley, corn, rye, oats, hemp, hops, hides, lard, cornmeal, pork, tobacco. These prices were obtained from manuscript data furnished by Professor Hansen, not published in his article. For the years 1825-1863 the commodities making up the farm-price index are: beef, butter, cheese, wheat, corn, rye, oats, hops, hides, lard, cornmeal, pork, tobacco, and wool. Both indices are simple arithmetical averages. The index numbers are presented in tabular form on page 493 of the Statistical Appendix.

farmers found little comfort. What they wanted to know was not how to grow greater crops and fatter animals (irrespective of cost), but how and where to sell what they already had produced. Such knowledge the societies were not prepared to supply. In favoring the withdrawal of State aid from the New York societies, a legislative committee called attention to the prevailing business depression and said:

"Agricultural products especially, if remote from market, will net but very little; and these appropriations necessarily increase the taxes upon the agriculturist, whose

crops, when raised, will hardly be sufficient to pay them. Were these societies calculated to raise the *price and value* of crops, as well as to increase their quantity, they would perhaps be entitled to additional consideration.”²⁵

DISREGARD OF PRODUCTION COSTS IN AWARDING PREMIUMS.

The neglect of economic considerations by the societies in the distribution of their premiums was at the bottom of much of the indifference and even hostility with which they were regarded by working farmers. Complaints were frequent that the societies were undemocratic institutions. “However much to be deplored, it cannot be disguised,” said the speaker at the 1823 cattle show of the Berkshire (Massachusetts) society,²⁶ “that there is a lurking jealousy and ill-will toward these societies. . . .” The working farmers did not feel kindly toward the gentlemen farmers who usually held the offices in the societies and took all the premiums. But their attitude was not mean envy. They showed a justifiable disgust at the award of premiums to livestock and crops without regard to the costs involved in producing the specimens. Naturally, they had no chance in a competition purely of production. A Dutchess County farmer wrote to the New York Board of Agriculture as follows:²⁷

“I have killed, without any other feeding than was common to my working oxen and cows, two stag steers short of four years old, the beef of which weighed about 900 lbs. and in New-York sold for \$8 and \$9 per cwt. and made beautiful beef, although they were bulls until after they were two years old. And yet if I was to exhibit my stock (which for beauty of form cannot be exceeded,) I am persuaded, from the examples I have seen, that the premiums would be awarded to some ill-formed, over-fed, monstrous animal, that has been fed for the purpose, in a manner that, if adopted by any farmer, would ruin him; while the raising of stock according to my method, would be one of the most profitable articles that could engage the attention of a practical farmer.

“The above is so well understood to be the manner in which the state bounty is disposed of, that very few of the best practical farmers in this part of the country will become members of agricultural societies, or attend their exhibitions.”

WHAT THE COUNTY SOCIETIES ACCOMPLISHED.

In spite of many defects, the county societies of this period should be credited with valuable accomplishments. Their annual cattle shows were the first agencies for agricultural education which had a popular appeal. The exhibition of Merino sheep, of English cattle, and of new tools and machines spread the knowledge of these improvements among practical farmers more rapidly than could any other existing institution. For example, the introduction in the years 1820 to 1830 of the cast-iron plows was much hastened by their exhibition and practical demonstration in the plowing matches at the shows. The annual addresses contained flowery rhetoric and copious references to

²⁵ *N. Y. Assembly Journal*, 44th session (1820-21), p. 842.

²⁶ *N. E. Farmer*, II (1823-24), p. 212. See also *Mass. Agricultural Repository*, X (1828-32), p. 103.

²⁷ *Memoirs*, II (1823), p. 188. See also *N. H. Agric. Soc. Transactions*, 1850, 1851, 1852, p. 29; *N. Y. Farmer*, VII (1834), p. 151; Welby, in Thwaites, *Early Western Travels*, XII, 320.

Pliny, Columella, and Virgil which passed harmlessly over the heads of the majority of the audience. Much of the advice which the speakers gave was fortunately neglected, such, for instance, as the exhortations to plant hemp and to raise silkworms, and, in New England, to grow wheat.

The social and recreational features of the cattle shows, early emphasized by Watson, were perhaps no less important than the purely educational. They satisfied the farmers' need for more social contacts and, on the whole, they can hardly have failed to stimulate better farming. Even if the majority of attending farmers disdained to compete for premiums, their ambition must have been stirred. Moreover, the association in each county of hundreds of farmers in an organization of their own must have given rise to a new community of interest and have created a new feeling of their importance as an economic group.

REVIVAL OF STATE AID—CROP BOUNTIES—AGRICULTURAL SURVEYS.

The years 1835 to 1840 mark the beginning of a new era in the policy of State aid to agriculture. State legislatures were besought on all sides for appropriations, for the aid of county societies, for the establishment of State boards of agriculture, for agricultural schools, for the collection of information, for crop bounties, and for the eradication of insect pests. In New York, the State capitol was besieged each year by a State agricultural society and a State agricultural convention, pointedly holding their meetings at Albany while the legislature was in session. In 1841 the lawmakers capitulated, granting a substantial appropriation for agricultural purposes.²⁸

In Massachusetts and in Maine the State legislatures revived the old policy of direct subsidies to encourage the production of certain crops. Massachusetts in three years, 1838 to 1840, paid out \$27,900 in bounties for the production of 288,065 bushels of wheat.²⁹

"The experiment, as this result proves, was a failure. And although each claimant for the bounty was obliged to make a minute statement of his process of culture, no new light was obtained of practical importance. There was much complaint of injury to the crop by drought, grain insect, smut, &c., and but little enterprise and perseverance shown in continuing its cultivation."³⁰

A bounty on the production of raw silk was also ineffective. In the 5 years 1836 to 1840, when bounties were offered, \$2,430 was paid out on 14,160 pounds of cocoons, 956 pounds of reeled silk, and 344 pounds of thrown silk. In Maine a bounty on wheat was offered in 1837 and in 1838 a bounty on corn. Both acts were repealed in 1839 after claims amounting to \$231,500.86 had been paid.³¹

AGRICULTURAL PERIODICALS.

The origin of the American agricultural press, comprising weekly and monthly journals devoted wholly or in large part to agricultural interests, falls

²⁸ N. Y. State Agric. Soc. *Transactions*, XXIII (1863), pp. 151-155.

²⁹ *Massachusetts Legislative Documents*, 1841, Senate Doc. No. 25, House Doc. No. 40 (1839).

³⁰ Mass. Bd. Agric. *9th Annual Report* (1861), p. 123.

³¹ *Maine Legislative Documents* (1843), *Treasurer's Report*, 12.

in the second and third decades of the nineteenth century. The first American "farm paper" was the *American Farmer*, which began in Baltimore in 1819 a career of continuous publication lasting until 1833. *The New England Farmer*, established in 1822, *The New York Farmer* (1826), *The Genesee Farmer* (1831), *The Cultivator* (1834), *The Maine Farmer* (1835), were all ably conducted and widely read. In addition there sprang up in the years 1830 to 1840 a number of short-lived journals, published principally in western cities. Altogether there were more than 30 agricultural periodicals in circulation at the end of the period, with, perhaps, 100,000 readers.³²

There was much in the early periodicals which was but poorly adapted to the needs and understanding of the mass of rural people. A letter to the *New England Farmer*³³ complains

"there is so little matter in it of use to the small, poor, middle-interest farmer. . . . and there is so much about flowers, tulips, geraniums, etc., etc.; and so much about this and that great farm, managed by the rich and opulent, all of which is beyond the reach and calculated to discourage the great mass. . . ."

On the whole, however, they were important educational agents. They cooperated with the agricultural societies, publishing their premium lists and announcing their awards. They printed extensive accounts of the annual cattle shows, with excerpts from many of the addresses. They reprinted extensively the more important English agricultural treatises; they gave summaries of foreign and domestic news. By quoting regularly the prices of farm products in the principal city markets, they attempted to keep their readers in touch with price fluctuations and market conditions.

AGRICULTURAL SCHOOLS.

A beginning was made in formal instruction in agriculture in American educational institutions in 1792, when a professorship of natural history, chemistry, and agriculture was established at Columbia University. The funds for the support of the new chair came in part at least from an appropriation by the New York legislature. It was not until 1822, however, that there was opened at Gardiner, Maine, the first American institution devoted exclusively to training young men for the vocation of farming. The Gardiner Lyceum, named from its founder and principal benefactor, Robert Hallowell Gardiner, opened its doors in January 1823, with a faculty of one, a lecturer in natural philosophy. By February 1828, there had been under instruction 191 students. The elective system, short winter courses, and an experimental farm, where students might earn a part of their board, were notable features of the school. The Maine legislature voted \$2,000 of State funds to the lyceum in 1823 and continued the appropriations until 1831. After that date the school lost its distinctive agricultural character.³⁴

Schools for farmers' sons were actively discussed in other New England States, and in Connecticut, at Derby, a school, opened in 1824, seems to have had considerable success for a year or two.

³² Estimates of Jesse Buel, in *The Cultivator*, V (1838-39), p. 29; VI (1839-40), p. 67.

³³ XVII (1838-1839), p. 406.

³⁴ See Stevens, *America's First Agricultural School*, in *Scientific Monthly*, XIII, No. 6 (Dec. 1921), pp. 531-540.

"The agitation for agricultural training had become so pronounced that many private enterprises took advantage of it to organize schools. Into these schools were incorporated more or less of the new doctrines of manual labor, application of science, training for occupation, democracy of education, while usually holding in the main to the classical or literary routine as a framework or background. Some of these institutions were no doubt more or less speculative. Some of them were pretentious in their announcements and were likely to assume the name of college, but they were what we would now call private schools."³⁵

The ideas of vocational training in agriculture developed by Fellenberg in Switzerland were incorporated in the policies of a number of American schools, notably those founded at Bristol, Bucks County, Pennsylvania, in 1831, and at Whitesborough, Oneida County, New York, in the same year. A cardinal feature of these schools was the insistence on manual labor by the students. At the Rensselaer Polytechnic Institute at Troy, New York, instruction in agriculture was given at first according to Fellenberg's methods, but later the manual requirement was abandoned.

The idea of a State agricultural college was given a great deal of discussion in the agricultural periodicals and in the annual addresses of the agricultural societies. In New York the State society in 1833 outlined a plan for a school and a farm to be supported by State funds, and the next year a joint committee of the legislature reported favorably a bill to carry out the plan, but no action was taken.³⁶ It was not until the decade before the Civil War that the State agricultural schools became a reality.³⁷

³⁵ Bailey, in Bailey, *Cyclopedia of American Agriculture*, IV, 377.

³⁶ *N. Y. Farmer*, VI (1833), p. 84; VII (1834), p. 151.

³⁷ Many of the facts in this section have been taken from the article by L. H. Bailey, *Education by Means of Agriculture*, in Bailey's *Cyclopedia of American Agriculture*, IV, chapter VIII. I have also used A. C. True's article, *Agricultural Education in the United States*, in U. S. Dept. Agric. *Yearbook* (1899), pp. 157-190.

CHAPTER XV.—FOREIGN TRADE AND THE HOME MARKET.

DECLINE IN RELATIVE IMPORTANCE OF EXPORTS OF FARM PRODUCTS.

Export trade in farm products was relatively of less importance to the northern farmer in the early decades of the nineteenth century than in the late colonial period. Then the foreign market had offered practically his sole opportunity for sales, but now shipments to the West Indies and to Europe were overshadowed by sales to the manufacturing villages at home. The period 1790 to 1807 was characterized by a large European demand for American breadstuffs, to supply the deficiencies caused by war and crop failures. At this time, too, England was forced, owing to the war-time interruption of communication with her colonial possessions in America, to temporarily remove the restrictions on exports from the United States to the West Indies.¹

TABLE 28.—Average annual exports of selected farm products.

[Source: U. S. Commerce and Navigation Reports. See tables 66 and 67, pp. 493, 494.]

Year.	Wheat, ^a thousands of bushels.	Corn, ^b thousands of bushels.	Pork and ^c pork products, thousands of pounds.	Butter and cheese, thou- sands of pounds.	Beef and tallow, thou- sands of pounds.
1791 to 1807....	4,169	1,838	14,289	2,786	17,334
1808 1814....	4,214	1,457	5,590	1,677	8,009
1815 1820....	4,695	1,379	12,042	1,546	7,012
1821 1830....	4,116	1,322	21,130	1,951	14,532
1831 1840....	4,446	1,035	20,730	1,734	8,510

This table shows exports from Baltimore, New Orleans, and other southern ports, as well as from the ports of Northern States.

^a Including wheat equivalent of flour exports.

^b Including corn equivalent of corn-meal exports.

^c Pork, hams, bacon, and lard.

Foreign trade was subject to serious interruption in the years 1808 to 1814, first by the embargo and non-intercourse acts and then by the War of 1812. After 1815 the disposal of stocks accumulated during the war caused large exports to Europe for a few years, but the temporary prosperity was soon brought to an end by the crisis of 1819. In the remaining 20 years conditions in both the European and West India markets were not favorable to our export trade. Europe, now at peace, was able to supply her own breadstuffs. In England the corn laws imposed heavy duties on the import of foreign wheat. The trade with the British West Indies, according to the commercial treaty of July 1815, was to be regulated as either nation (i. e., England or the United States) desired. The result was that shipments of American flour, provisions,

¹ See p. 135.

corn, rice, lumber, and livestock were limited, and American ships were excluded from the ports of the British Islands. The United States replied by forbidding the exportation of these supplies in British vessels. Direct inter-

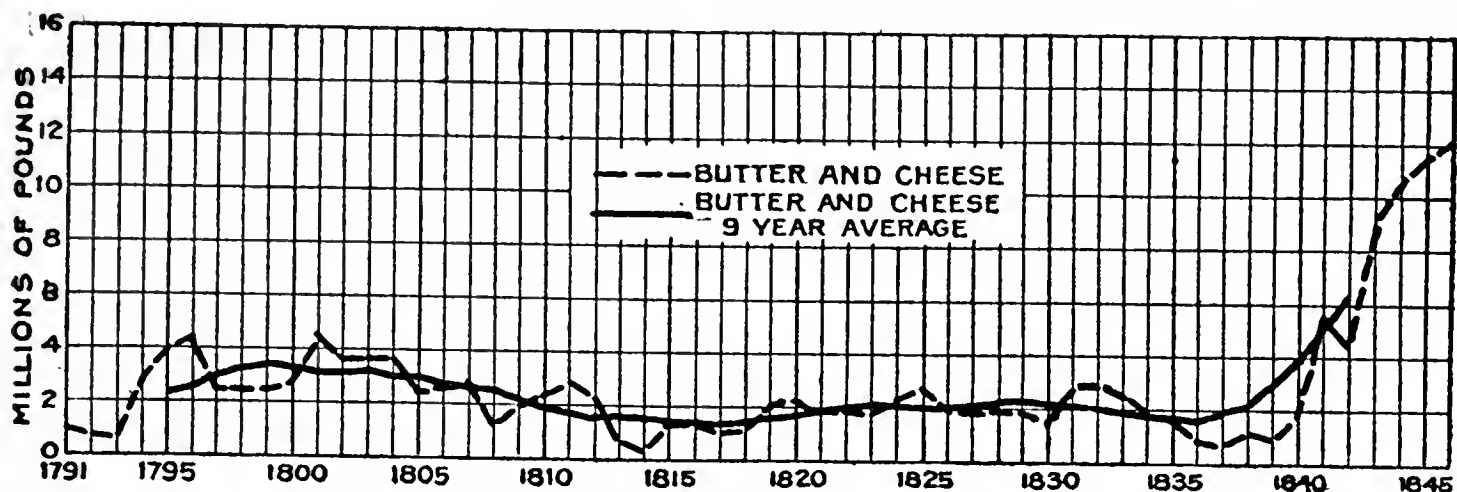


FIG. 10.—Exports of butter and cheese, 1791–1846.

course being thus at an end, the islands were nevertheless supplied in roundabout fashion through the ports of Swedish and Danish colonies. Not until 1830 did the final adjustment of the controversy again permit direct trade.²

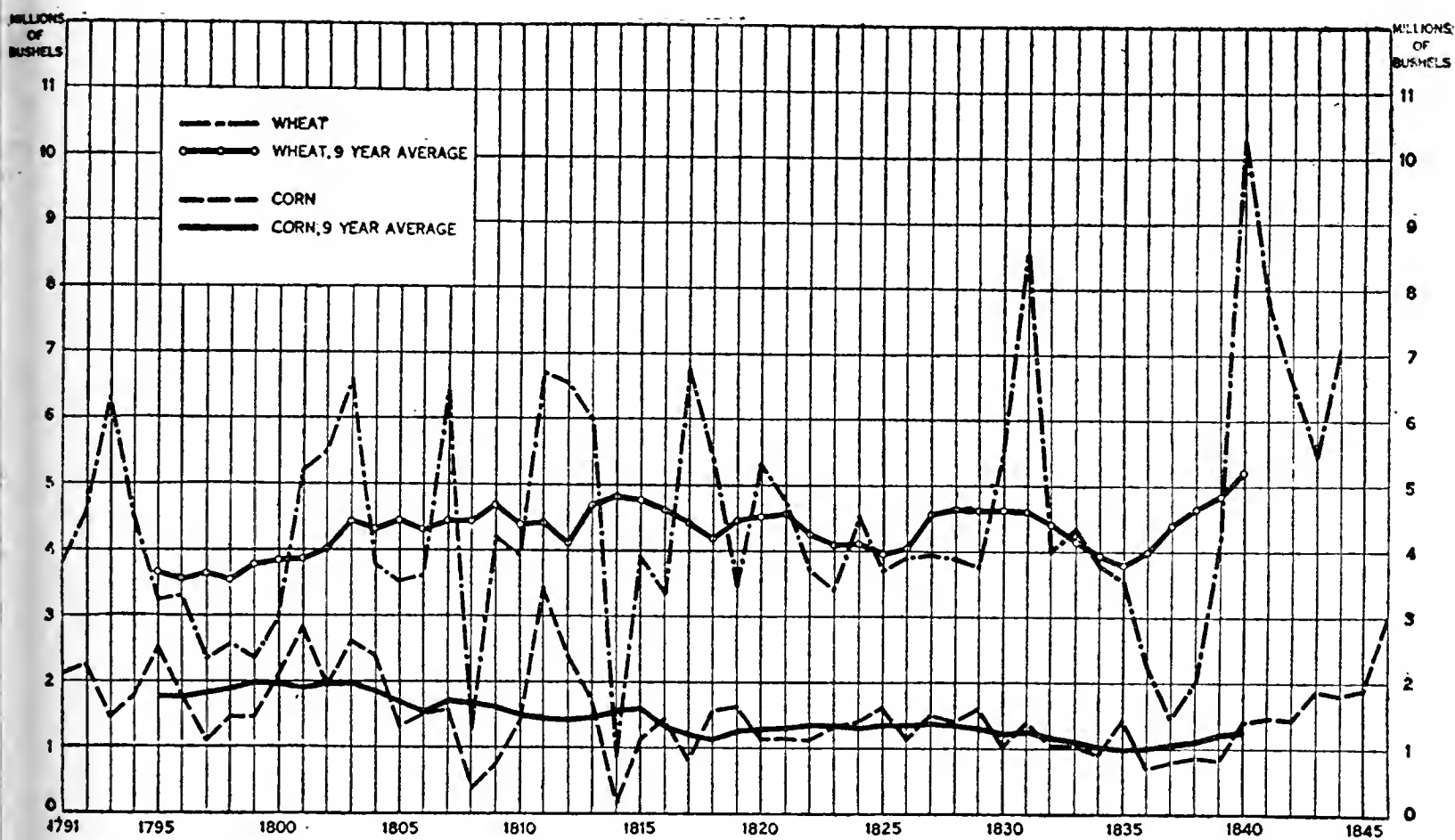


FIG. 11.—Exports of wheat and corn (including wheat, flour and cornmeal), 1791–1846.

The fluctuations in the principal exports of northern produce are shown in figures 10, 11, and 12. The data from which the charts were prepared will be found on pages 493 and 494.

THE HOME MARKET.—ITS SIGNIFICANCE.

In the first half of the nineteenth century an industrial revolution was in progress in our Eastern States, comparable in its significance and in many of

² See Johnson, et al., *Domestic and Foreign Commerce of United States*, II, chs. XXIII and XXIV; *American State Papers, Commerce and Navigation*, II, 631.

its characteristics to the industrial revolution in England of the last half of the preceding century. On this side of the Atlantic as on that, power machinery replaced hand tools, and the processes of manufacture were transferred from the farmhouses and from the shops of craftsmen to factories. Manufacturing split off from agriculture, and there arose a specialized non-agricultural class in the community, consumers but not producers of farm products. The foreign market after 1815 was shrinking, and at best it had been casual and precarious. But now a sure and growing market was established, as it were, at the farmers' very door.

The importance to agricultural development of the home market thus created can hardly be overemphasized.³ By giving the farmer an opportunity

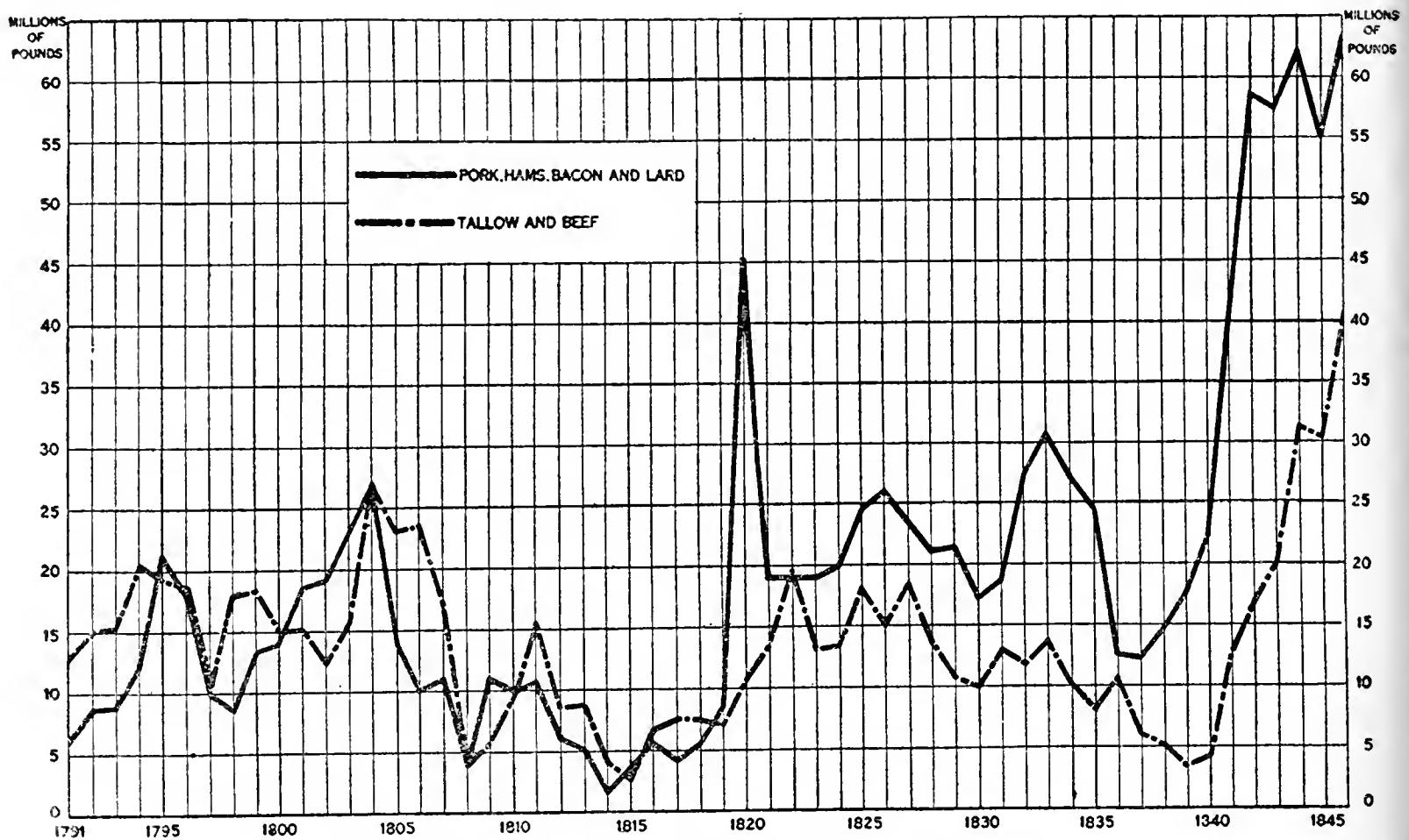


FIG. 12.—Exports of meat products, 1791-1846.

near at hand to sell his produce it did what all the exhortations of agricultural societies and publicists had failed to do. It stimulated increased production, better tillage, and improvement of livestock. Self-sufficing farming was given up. The farmer, having something to sell, could now buy his clothes, furniture, and tools. He got better goods at less cost and his standard of living rose. Like manufacturing, agriculture became an independent, specialized industry. By becoming less of a jack-of-all-trades, the farmer became more of a farmer. He became more efficient by specialization. The development of the market caused also a territorial division of labor in agriculture. Under the old conditions all the products consumed in a locality had to be raised there, but when the opportunity of profitable sale was afforded, each locality

³ The "home market" received much attention from economists and politicians in the years 1820 to 1840. The necessity of tariff protection to manufactures in order to stimulate agriculture was the basis of Clay's "American system." The superiority of the home market to the foreign market was strongly emphasized by Henry Carey, the foremost American economist of his day, in his *Principles of Social Science*, II, 28-31.

tended to concentrate its attention on the products for which it was best fitted on account of soil and climate and location in respect to market. And so by the fuller utilization of the advantages of each locality, the productivity of farming was increased.

But all these remarkable changes did not happen at once. In fact, all the possible advantages of commercial agriculture have not yet been completely realized. In the period under consideration only their beginnings can be traced. The market at first developed but slowly, and farmers, for a great many reasons, were slow to take advantage of their new opportunities. Conservative, with but little scientific knowledge, and perhaps even less business experience, they not unnaturally hesitated and clung to the old ways. Gradually they gave up household manufactures and modified their farm management to meet market demands, and then came the competition of the West in grain, provisions, and wool, which upset many of their calculations and forced a reconsideration of their problems.

INCREASING DENSITY OF POPULATION IN THE EAST.

Statistical evidence of the growth of a home market is found in the increasing density of population east of the Alleghenies and in the beginnings of urban concentration.

TABLE 29.—*Population east of Allegheny Mountains, 1790 to 1840.*
[Thousands of people.]

	1790.	1800.	1810.	1820.	1830.	1840.
Maine	97	152	229	298	399	502
New Hampshire	142	184	214	244	269	285
Vermont	85	154	218	236	281	292
Massachusetts	379	423	472	523	610	738
Rhode Island	69	69	77	83	97	108
Connecticut	238	251	262	275	298	310
New Jersey	184	211	246	278	321	373
Eastern New York ^a	339	572	884	1,107	1,512	1,881
Eastern Pennsylvania ^b	325	405	520	659	819	995
Total ^c	1,858	2,421	3,122	3,704	4,607	5,484

DENSITY PER SQUARE MILE AT SUCCESSIVE CENSUS DATES.

	1790.	1800.	1810.	1820.	1830.	1840.
Maine	3.2	5.1	7.7	10.0	13.4	16.8
New Hampshire	15.7	20.4	23.7	27.0	29.8	31.5
Vermont	9.4	16.9	23.9	25.9	30.8	32.0
Massachusetts	47.1	52.6	58.7	65.1	75.9	91.7
Rhode Island	64.5	64.8	72.1	77.8	91.1	102.0
Connecticut	49.4	52.1	54.3	57.1	61.8	64.3
New Jersey	24.5	28.1	32.7	36.9	42.7	49.7
Eastern New York	9.5	16.0	24.7	30.9	42.2	52.5
Eastern Pennsylvania	15.4	19.1	24.5	31.1	38.6	47.0
Summary	14.7	19.1	24.7	29.3	36.4	42.9

^a See note a, Table 22, p. 152.

^b See note b, Table 22, p. 152.

^c Including fractions of thousands.

The increase of the manufacturing and commercial population was rapid after 1810, and in some localities the whole gain in numbers between 1810 and 1840 was thus explained. In southern New England (Massachusetts, Rhode Island, and Connecticut) in 1810 there were 811,000 people; by 1840 this number had increased to 1,157,000. Analysis of the history of the commercial and manufacturing communities shows that their growth explains the entire increase. The population of agricultural townships, on the other hand, showed a tendency to decline.⁴ In Northern New England little manufacturing had developed before 1840 and the gain in population was therefore largely agricultural.

URBAN CONCENTRATION.

Selecting as urban centers all communities of over 8,000⁵ people, we find in 1790, in the territory north of Maryland and east of the Alleghenies, only three such towns, Boston, New York, and Philadelphia. Their combined population was less than 80,000 and made up but 4.2 per cent of the total. In 1840 there were in the same territory 33 urban communities, whose combined population was nearly 1,000,000, or 17.9 per cent of the total. West of the Alleghenies in the northern region there were no towns of 8,000 in 1790. In 1840 there were 7; Buffalo, Rochester, Pittsburg, Allegheny, Cincinnati, Louisville, and St. Louis, with a combined population of about 150,000. The location of urban centers and their relative size is indicated in figure 13.

In 1790, Boston had 18,000 inhabitants; in 1840 there were in the city 93,000, and in the surrounding suburban area (towns whose central points were not more than 10 miles distant) about 80,000 more. New York had grown from 33,000 to 313,000. Its suburban area (including the adjoining counties. Queens, Kings, Richmond, and Westchester and portions of Essex and Union counties in New Jersey) contained about half a million people, a large part of whom were purchasers of farm products. The density of population in this area averaged 400 to the square mile. Philadelphia, including the county as well as the city, had 55,000 in 1790 and 258,000 in 1840.

THE INFLUENCE OF THE HOME MARKET.

The beginnings of better farming in the East were found principally in the neighborhood of the three largest towns—Boston, New York, and Philadelphia. In these suburban areas the farmers, stimulated by the educational and inspirational propaganda of the agricultural societies and encouraged by rising prices, made substantial progress. They improved their soil with gypsum and clover, and they improved their sheep and cattle by importation of European breeds. But about 1820 export markets failed, prices collapsed, and the agricultural societies went out of business. Agricultural improvement must have received a severe set-back had it not been for the new home market, which at this time was just beginning to make itself felt.

⁴ Bidwell, in Am. Statistical Asso. *Quarterly Publications*, new series, XV, 813-839.

⁵ The task of selecting communities which were urban presents marked difficulties. (See *U. S. Census of 1880*, I, *Population*, p. xxviii, and *Census of 1910*, I, *Population*, p. 53.) The 8,000 limit is conservative for there were in 1840 many industrial communities in New England of between 5,000 and 8,000 inhabitants.

With new markets growing up at the farmer's front door, agriculture went forward, and now the progress was democratic and widespread. The economic force of the market worked on "dirt farmers" as well as on gentlemen farmers. With the new iron plows, harrows, and cultivators came better tillage; with the horse rakes larger hay crops were harvested. The hay was better, for clover and other artificial grasses were sown more generally. Potatoes and other roots were for the first time grown in quantities for fodder. Livestock

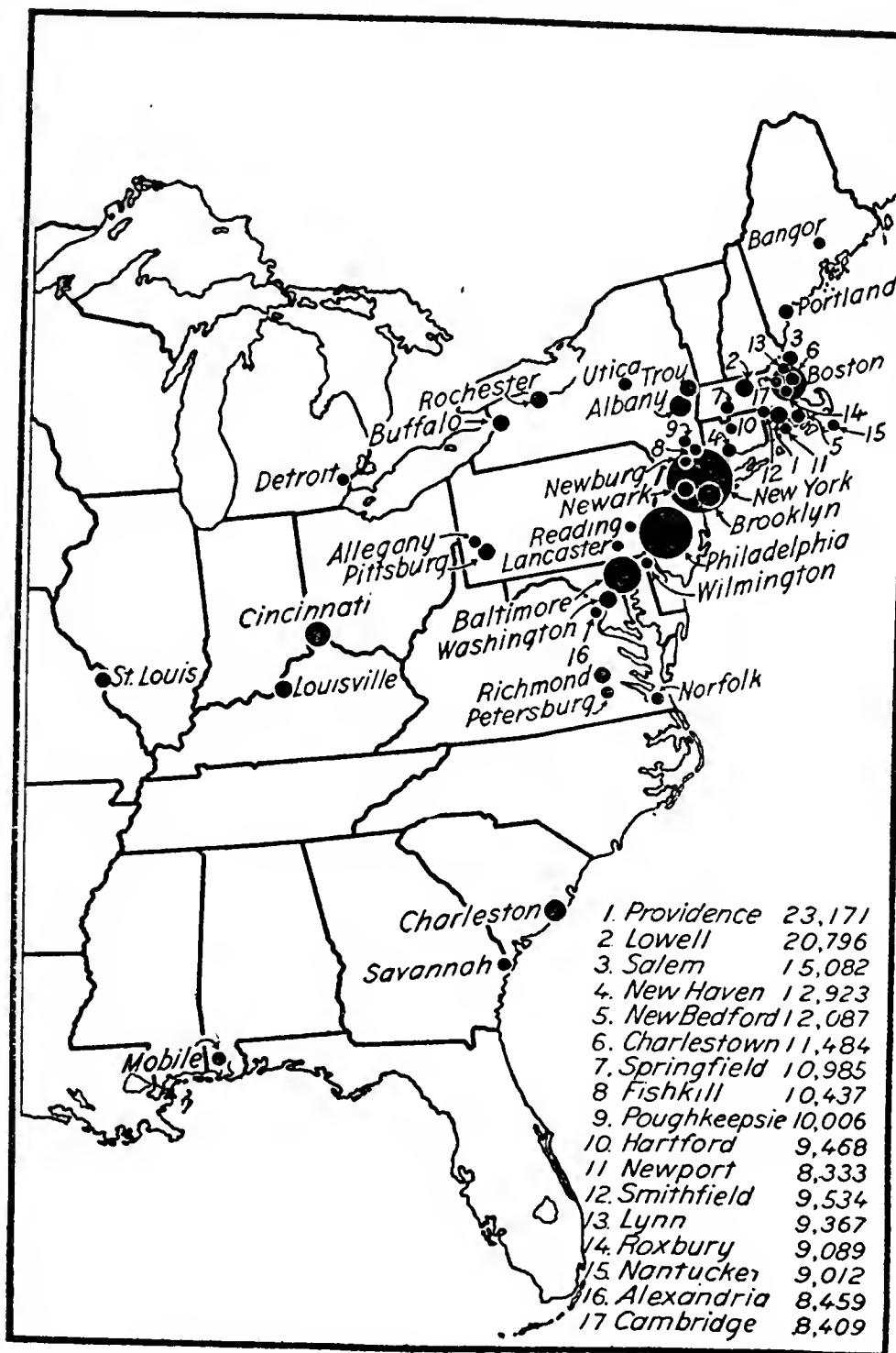


FIG. 13.—Urban concentration, 1840.

were better kept and more attention was paid to the breeding of sheep, cattle, and swine. Barnyard manures were more carefully preserved; gypsum and lime were more widely used. By 1840 the results were evident. Buel⁶ observed that the depleted soils in some of the older districts had been renewed by intensive cultivation. He wrote:

"The counties of Dutchess, Orange, Columbia, and a large portion of Long Island, in our own state [New York] and many districts in Massachusetts, Pennsylvania, &c. sufficiently attest this fact. In these, exhaustion has given way to a system of augmentation and improvement."

⁶ *The Cultivator*, IV (1837-38), p. 93.

IMPROVEMENTS IN NEW ENGLAND.

In New England there was a general atmosphere of improvement. Said the speaker at the Middlesex County (Massachusetts) Fair in 1847:⁷

“Within the last twenty years agriculture has made great advances in this county: meadows have been reclaimed; drains have been opened; beautiful orchards have been planted; tasteful cottages, improved houses and barns, have been constructed; the races of animals have been improved; the sources of fertility have been guarded; land more highly cultivated; and the society I have the honor to address has, no doubt, contributed to the progress of agriculture.”

The prosperity of farmers was reflected in a greater interest in civic betterment. The pastor of a small town in New Hampshire related in 1837 the remarkable changes that had occurred there.⁸

“As this is an age of enterprise and improvement, it would be expected, that even in the history of a small town, something would be said on this subject. And I would say, that whoever recollects the aspects of the roads, the fields and the buildings, as they were forty years ago, and looks on them now, and considers what vast labor and cost of a hale and enterprising people have been expended, he would be surprised at the change.

“The meeting-house was all tattered and torn, without a steeple, without a bell, and almost without a covering; and might have remained so for an age, or till it rotted down, if it had not been for the people of God, who, with their own money and hands, by divine aid, put it in a better condition. The roads were full of stones, or in some places of mire; but now for almost six miles, . . . they are paved underneath with stone, and covered with gravel. The buildings, which were mostly old and shattered, are now repaired or displaced for new ones, and many new and handsome houses are reared up where there were none before. The fences, reeling and decaying, are turned into stone wall, of which, perhaps, there is more than in any other town of the same size in the state. The swamps, which were full of useless bushes and hammocks, are now levelled and replenished with luxuriant grass.”

MARKET INFLUENCES MORE EFFECTIVE THAN EDUCATIONAL WORK.

Partial credit for the progress of the period is due to the agencies for the diffusion of agricultural knowledge, the annual fairs held by the few surviving or reorganized societies, and the farm papers, but market influences were by far more important. Wherever a paper mill or a woolen mill, a chair or cabinet shop, or an iron foundry was established, farmers began to sell raw materials, straw, wool, lumber, and building materials, firewood and meat, grain, dairy products, and vegetables for the mill-hands. Leaders of agricultural opinion realized the significance of the home market. After enumerating the measures adopted by the New York Board of Agriculture to increase production by the diffusion of knowledge, etc., a contributor to its *Memoirs* wrote:⁹

“I have long been of the opinion, that the most powerful inducements which could have been held out, has been omitted. I mean that of providing prompt and ready markets for these productions. . . . A ready demand for agricultural productions, at

⁷ Address of E. H. Derby, in *Abstract from the Returns of Agric. Soc's., in Mass., 1847*, p. 221.

⁸ Rev. John Kelly, *Sketch of Hampstead (New Hampshire)*, in *N. H. Hist. Soc. Collections*, V, 192.

⁹ Tibbitts in vol. III (1826), p. 289.

remunerating prices, it is presumed, is the only adequate inducement which can be relied upon, for insuring a careful cultivation of the land, or for increasing the quantity of its produce. It appears almost certain, that no bounties or encouragements, which it is in the power of the state, or of societies to pay directly to the agriculturist, can induce him to make much improvement in his modes of cultivation, or to raise any thing beyond the immediate demands of his family; while any surplus which he may raise, beyond that amount, shall be worth nothing; or where it cannot be sold, or exchanged, upon terms of comparative equality with the profits of the capitals and labor employed in the production of all the other articles required for his support."

Concrete instances might be multiplied of the direct connection between the home market and better farming. The following item from the *Kennebec (Maine) Journal*¹⁰ describes the relation of manufactures to agriculture in Winthrop, Maine:

"No one can ride through the town of Winthrop without observing the greater beauty of the farms, and the higher state of cultivation, than prevails generally in the State. This has been in a great measure effected by the Agricultural Society in that town; but in connexion with this there is another cause for a thrifty agriculture, viz. a *cotton factory*. Do not smile, reader; the factories of the Eastern States have been the impelling and most efficient causes of agricultural improvement and the increased value of land. They have furnished the ready home market for the wool, the hides, the fuel, timber, beef, pork, hay, butter, cheese, apples, cider, potatoes, and a great many other vegetables, besides eggs, lamb, veal, and many other things, most of which cannot be exported because of their perishable nature, and for none of which there is any foreign market to be depended upon. The Agricultural Societies, agricultural publications, and the experiments and study of scientific farmers, have diffused that *knowledge* of husbandry which has enabled the farmers to supply, *from the same land they before tilled*, the increased demand created by the manufacturing cities, towns and villages."

DIFFERENTIATING EFFECT OF THE MARKET.

Notwithstanding the optimistic tone of the above quotations, the agricultural millennium had not arrived in the East in 1840. There was still much bad farming, pastures covered with weeds, barnyards that were mud-holes, cruelly neglected stock, and scanty harvests. Such farming was typical of the eighteenth century; in unprogressive regions not touched with market influence it was perhaps no worse than it had been, but it seemed worse by contrast to the progress made elsewhere. It is true that better farming was not evenly spread over the East—progress was "spotty," and the spottiness was an inevitable result of the beginnings of commercial agriculture. As long as agriculture was self-sufficient and farm production was only for farm consumption, the superiority of one piece of land over another, and of one farm manager over his neighbor, were not obvious. But as soon as the two pieces of land and their managers were brought into business competition in producing for sale, then the differences in fertility and in location resulted in differing costs of production. Thus the market acted as a selective force. Under its influence good land became more sharply differentiated from poor land. The latter, even entire farms, was abandoned to grow up to woods while the farmers' efforts were concentrated on the better soil.¹¹

¹⁰ Quoted in *New England Farmer*, X (1831-32), p. 149.

¹¹ A catalogue of farms abandoned in Milford, Massachusetts, between 1750 and 1850 is given in Ballou, *Milford (Mass.)*, 389 et seq. On the conversion of pasturage to woodland in Plymouth and Norfolk Counties (Mass.), see *4th Report Agric. of Mass.*, 389.

CHAPTER XVI.—FARM LABOR AND LABOR-SAVING MACHINERY.

The contribution to agricultural progress which we think of as characteristically American is the invention and development of labor-saving machinery. Scarcity of labor, which for two centuries had been a characteristic of northern farming, was rendered even more acute in the years 1810-1840 by the growth of manufactures and by the competition of factories for the manpower of the community.

The importance of agricultural machinery to the Eastern farmer (and it was in the East that the new inventions were mostly used before 1840) can be appreciated only when we realize that the industrial communities were at the same time demanding from the farmer increased production and depriving him of an essential factor of production. Almost all farms east of the Alleghenies were probably on the stage of diminishing returns by 1840. Many of them had been in that condition for over a century. Unless improvements were made in the methods of farming, increased output could be obtained only at higher costs.

Farm wages were rising, and unless some way were found to make farm labor more effective it seemed that at the very outset eastern farmers would be baffled in their attempts to take advantage of market opportunities and to develop commercial agriculture. Had the new farm tools and machines not appeared manufactures would have been checked by rising labor costs, resulting from an increased cost of living, and consequently the home market itself would have developed less vigorously.

The invention, therefore, in this period, of a number of important machines such as the horse rake, the cultivator, the thresher, and the reaper, by which eventually horse power was to a large extent substituted for man power on the farm, and the improvement of ploughs and hand tools, making both horse labor and man labor more effective, were full of significance for the progress of the whole community and not alone of the farm people.

TREND CITYWARD AGGRAVATES FARM-LABOR PROBLEM.

There never had existed in the North a class of landless men who could be relied upon as agricultural laborers, and consequently farm work in that section was normally performed by members of the farm family. Orphans and the children of the poorer farmers who were "bound out" were practically the only other labor force. With the growth of the factory villages and towns the farmers' sons and daughters were drawn away from agricultural pursuits. The boys who were dissatisfied but who wanted to continue farming still went west, as the boys of earlier generations had done. But for a time after 1820 the competition of the cities seems to have largely checked

western migration.¹ The younger generation had the idea that farming was bound to be unprofitable and, besides, were oppressed with a growing sense of social inferiority to city folks. Speakers at cattle shows felt called upon to protest against the prevalent low estimation of agriculture as a "menial employment."² Wrote a contributor to the *New England Farmer*:³

"Every farmer's son and daughter are in pursuit of some genteel mode of living. After consuming the farm in the expenses of a fashionable, flashy, fanciful education, they leave the honorable profession of their fathers to become doctors, lawyers, merchants, or ministers or something of the kind. . . ."

Jesse Buel, writing in the *Cultivator*, described the same situation in New York.⁴

"Thousands of young men do annually forsake the plough, and the honest profession of their fathers, if not to win the fair, at least from an opinion, too often confirmed by mistaken parents, that agriculture is not the road to wealth, to honor, nor to happiness. And such will continue to be the case, until our agriculturists become qualified to assume that rank in society to which the importance of their calling, and their numbers, entitle them, and which intelligence and self-respect can alone give them."

Immigration afforded the farmer little help in the solution of his labor problem. The Irish and English laborers, who were arriving by the thousands every year in eastern ports, showed but slight aptitude for the varied tasks of American agriculture. A farmer from St. Lawrence County, New York, wrote:⁵

"We have, for a year or two past, had the offer of labour from British and Irish emigrants, but with general pretensions to a knowledge of farming, few of them can earn their board at the kind of labour required among us. The system of division of labour, so beneficial in the arts, manufactories, and some of the agricultural employments, of a country overstocked with hands, renders the labourers accustomed to it, of little use, among a people differently situated, who have been obliged from childhood to practice twenty different employments, with equal dexterity."

FARM WAGES, IN CHESTER COUNTY, PENNSYLVANIA.

In the absence of more general data, the scale of farm wages in Chester County, Pennsylvania, in 1828⁶ may be taken as typical of the general wage level in progressive communities of the East. By the year, agricultural laborers received \$80 to \$100 with board and lodging or \$8 per month in summer and \$5 in winter. By the day, the laborer received 40 cents with board, or if he "found" himself, 62½ cents. For harvest hands, piece-work rates were as follows: reaping wheat, \$1.75 to \$2 per acre; for mowing "an acre of stout grass," about \$1; for mowing barley or oats, about 50 cents. When paid by the day, harvest hands received from 62½ to 75 cents with food. Although these wages seem small according to modern standards, the labor cost of farm operations was nevertheless high. A good workman could reap about a half-acre of wheat in a day, making the cost of harvesting that

¹ *Worcester Magazine*, I (1825-26), p. 111; II (1826), p. 35; *N. E. Farmer*, IV (1825-26), p. 186.

² *Address of Peter Eaton*, before Essex County (Massachusetts), Agricultural Society (1822), p. 5. See also *N. E. Farmer*, VIII (1829-30), p. 26; XVIII (1839-40), p. 206.

³ XVII (1838-39), p. 406.

⁴ IV (1837-38), p. 190.

⁵ In *N. Y. Bd. Agric. Memoirs*, II (1823), p. 87.

⁶ *Letter of Wm. Darlington in American Farmer*, X (1828), p. 73.

crop $87\frac{1}{2}$ cents to \$1 per acre. Mowing barley and oats at 3 acres a day, the usual rate, cost the farmer $16\frac{2}{3}$ cents per acre. For threshing, the price was usually $12\frac{1}{2}$ cents per bushel for wheat, 7 cents for barley, and about 5 cents for oats, the laborer finding his own food. The usual daily output of the laborer at this work was 8 bushels of wheat or 15 bushels of barley or 20 bushels of oats.

TREND OF FARM WAGES IN MASSACHUSETTS.

Data for agricultural wages in this period for Massachusetts⁷ show an unmistakable upward tendency. (See fig. 14.) The data on which the curves are based will be found in table 69, p. 495.

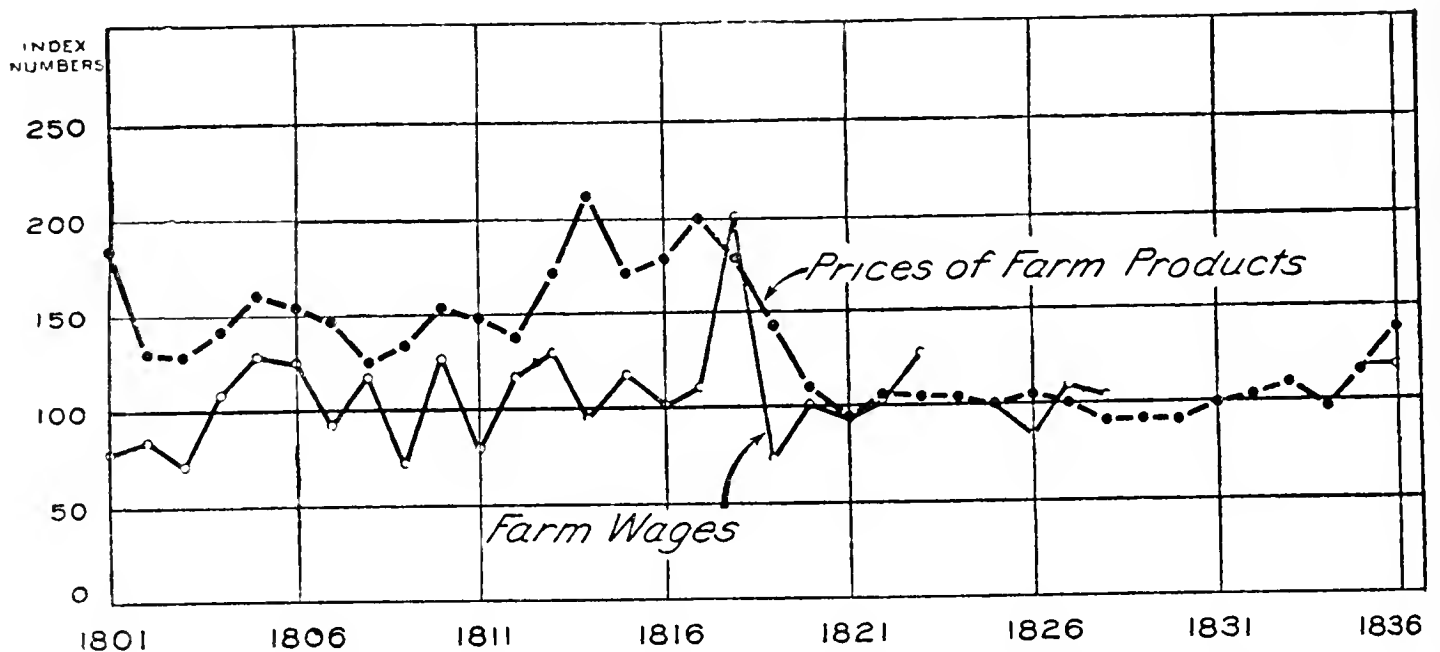


FIG. 14.—Wages of farm labor and prices of farm products, 1801–1836.

Summarizing by decades, the average annual wages paid by the day without board were: 1791 to 1800, \$0.478; 1801 to 1810, \$0.779; 1811 to 1820, \$0.782; 1821 to 1830, \$0.803; 1831 to 1840, \$0.875.

TABLE 30.—Farm wages and farm prices.

Annual average for the years—	Corn, bus.	Beef, bbl.	Pork, bbl.	Rye, bus.	Farm wages per day.
1801–1805	\$0.920	\$11.80	\$18.40	\$0.990	\$0.696
1826–1830 .....	.666	8.30	12.30	.734	.765

The rising cost of labor was much more serious for the farmer than these figures of money wages indicate, for while wages were rising the prices of farm products were falling. The contrasting tendencies in wages in prices over a period of 25 years are shown in table 30.⁸

⁷ From Wright, *Wages and Prices: 1752–1860*. In *Massachusetts Bureau of Statistics of Labor, 16th Annual Report (1885)*, parts III and IV, p. 434.

⁸ The wages are from Wright, in *16th Annual Report, Massachusetts Bureau of Statistics of Labor*, parts III and IV, 434. In the absence of data for 1829 and 1830 the figures for 1825 and 1831 have been substituted. The prices are from Hayward, *Gazetteer of Massachusetts (Rev. ed., 1849)*, pp. 392–395.

The quantities of produce necessary to purchase 30 days' farm labor at the prices and wages given above are shown in table 31.

TABLE 31.—Quantities of produce necessary to purchase 30 days of farm labor in Massachusetts.

[Source: See Table 30.]

Years.	Corn, bus.	Beef, bbls.	Pork, bus.	Rye, bbls.
1801-1805	27.70	1.77	1.13	21.09
1826-1830	34.46	2.77	1.87	31.27

AGRICULTURAL TOOLS.

In hand tools important changes were effected. The clumsy wooden or iron-shod shovels, hoes, and forks were replaced by lighter and better designed implements with blades or tines of cast steel. The grain cradle came into

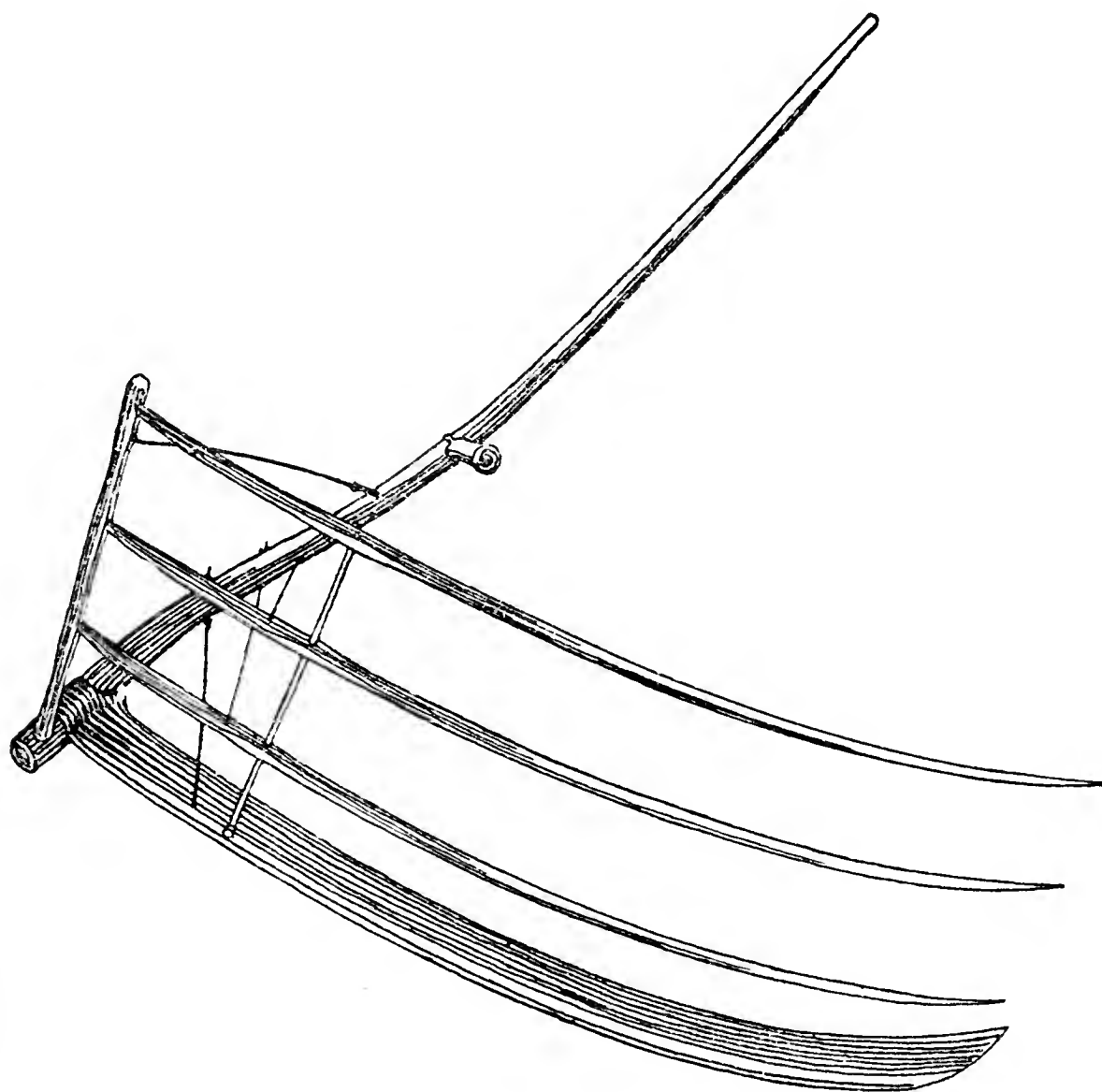


FIG. 15.—The cradle scythe.

general use, displacing the sickle. A new cradle, lighter and more effective, was designed, which was known as Vaughan's cradle, after the inventor, Charles Vaughan, of Hallowell, Maine. It was called also the Scotch bow or Scotch cradle.⁹ A contributor to the *Maine Farmer* wrote: ¹⁰

"It is much lighter, more easily made and kept in repair, than the common clumsy cradle, which is burdensome for a man to bear on his shoulder, and which to swing

⁹ A cut and description are given in *Maine Farmer*, V (1837), p. 178.

¹⁰ *Ibid.*, 251.

all day, requires great strength and effort. To reap half an acre of grain, is considered a fair day's work; and to do this well, a man must have had some experience in the business. To use the old-fashioned cradle, requires so much dexterity, that, with us, it is almost a trade by itself; and a cradler demands and receives two or three times as much pay as a common laborer.—With the improved cradle, after a little use, a good mower will be able to reap as much ground in a day, as he could mow, and to leave the grain in good order to bind up. It is no inconsiderable advantage to cut the straw close to the ground."

AGRICULTURAL MACHINERY.—IMPROVEMENTS IN THE PLOW.

Plows, harrows, and two-wheeled carts were the only kinds of farm equipment to which animal power had been applied at the beginning of the nineteenth century. The more effective design of plows and harrows and the substitution of the horse-drawn, four-wheeled wagon for the ox-cart constituted a great step forward in agricultural progress. Of equal if not greater importance was the extension of the application of horse power to other farm tasks, corn-planting and cultivating, hay-raking, reaping, and threshing. The

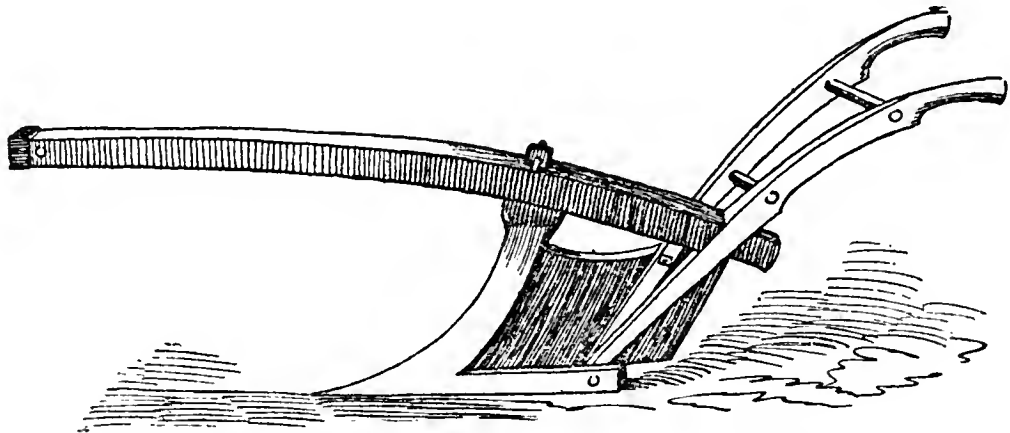


FIG. 18.—Newbold's cast-iron plow, 1797.

development of a better plow took two directions; (1) the improvement in its design or form, and (2) the substitution of iron at first and later steel for wood in the moldboard, share, and landside. To Thomas Jefferson belongs the credit of having first in America designed a moldboard on true mathematical principles.¹¹ Although Jefferson's plow did not prove a practical success, yet by his researches he demonstrated that plows could be made by rule and set forth one of the many rules that are applicable to their construction. To Jefferson, therefore, belongs the credit for taking the first step in removing plow-making from the domain of empiricism. Each plow need no longer be an individual product whose design was determined by the fancy or skill of its maker. It was now possible for moldboards to be produced by many plowrights on a common model.

In 1797, Charles Newbold, of Burlington, New Jersey, obtained a patent for a cast-iron plow, having the moldboard, share, and landside all in one casting. Before his time moldboards had been of wood, protected by iron plates, and some of these plows had been equipped with cast-iron shares.¹² Newbold had no success in persuading farmers to adopt his invention, al-

¹¹ Jefferson described his moldboard in a letter of March 23, 1798, to Sir John Sinclair, printed in *Am. Philosophical Soc. Transactions*, IV (1799), pp. 313 et seq.

¹² A cast-iron share was exhibited before the N. Y. Society for Promotion of Useful Arts in 1794. See *Transactions*, I (2d ed., 1801), p. 173.



FIG. 16.—Cradling and binding wheat in the old way.



FIG. 17.—Cradling wheat. (Photograph taken in Montgomery County, Indiana, July 2, 1918.)

though he spent large sums of money in the attempt. They are said to have objected that the iron poisoned the soil and encouraged the growth of weeds. Undoubtedly better tillage did cause weeds as well as crops to grow faster, but probably a more important cause of their rejection of the new invention was its cost, and the fact that when the share was dulled or broken the whole plow must be replaced.

Between 1800 and 1830 a great many new plows were presented to the farmers. In all, 124 patents were granted in this period, and, in addition, a number of English and Scotch models were imported for sale. The most important of the patents were those granted in 1814 and 1819 to Jethro Wood, of Scipio, New York. He improved the design of the moldboard, lessening its resistance. Like other inventors of his day he did not regard the

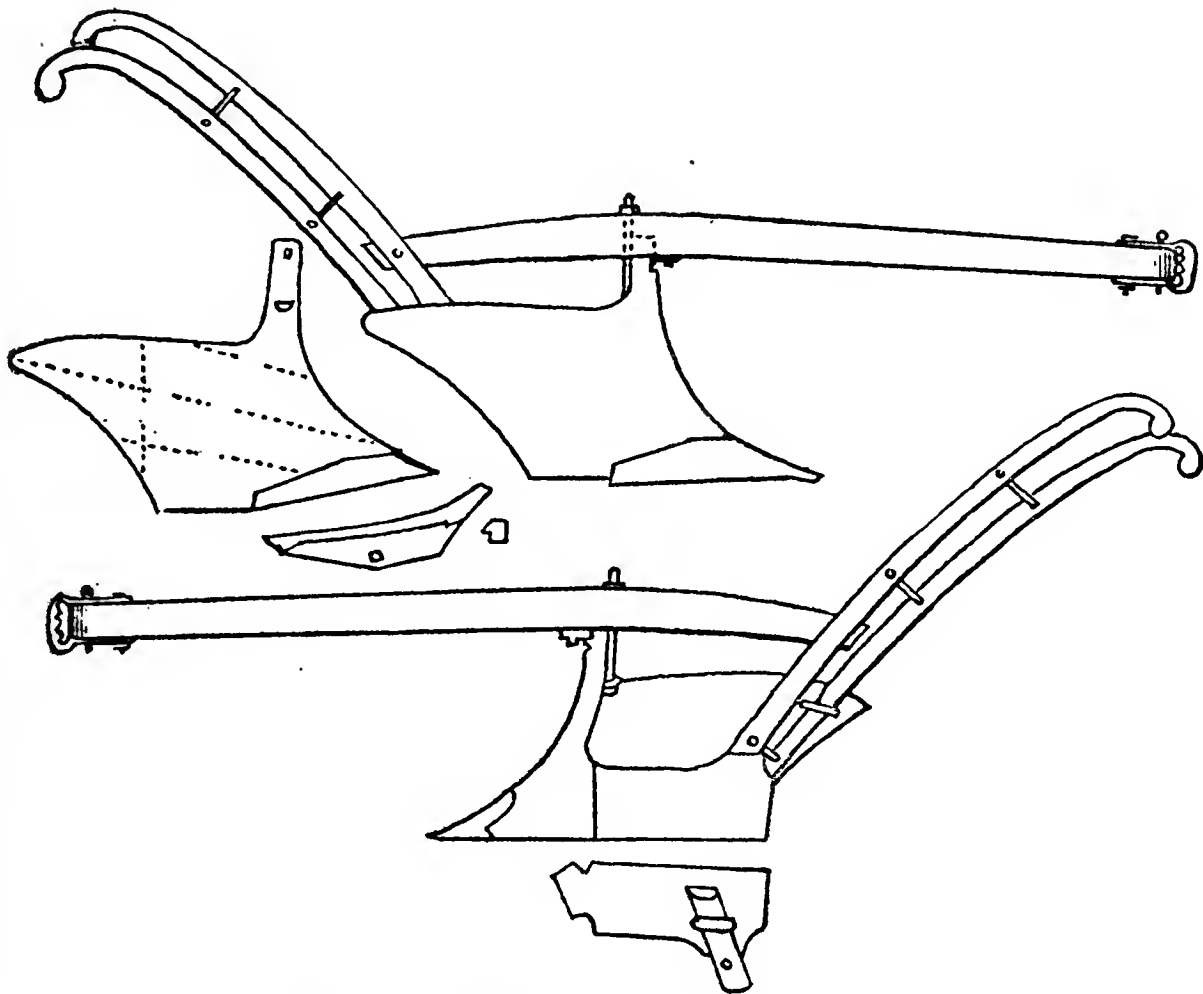


FIG. 19.—Jethro Wood's plow, 1819.

pulverization of the soil as an essential object in plowing. It was not until 1839 that a patent was taken out by Samuel Witherow and David Pierce which was designed to twist and bend the furrow-slice so as to leave it broken.¹³ Wood's plow, in contrast to Newbold's, was not cast in one piece, but was made up of several castings joined together and fastened by lugs and interlocking pieces. "It was the first plow in which the parts most exposed to wear could be renewed in the field by the substitution of cast pieces."¹⁴ Wood's invention, therefore, was one of the first instances, if not actually the first, of the application in the manufacture of agricultural machinery of the principle of standardization and interchangeability of parts.¹⁵ (See fig. 19.) The

¹³ Roberts, *Fertility of the Land* (1897 ed.), p. 49. Chapter II of this work contains an excellent discussion of the improvement of the plow from the earliest times.

¹⁴ Gilbert, *Jethro Wood*, 67.

¹⁵ A detailed description of Wood's plow is found in *Ploughboy*, II (1820-21), p. 123. Wood's specifications for the construction of his improved plow of 1819 are given in *N. Y. State Agric. Soc. Transactions*, XXVII (1867), pt. I, pp. 465-468.

process of cold chilling the landside and lower edge of the share, invented by Edwin A. Stevens of New Jersey in 1817, added greatly to the wear of these parts.¹⁶ A number of ploughs with a reversible or revolving moldboard and share were invented and came into use. Their principal use was in plowing across hillsides where it was desirable always to throw the furrow down the slope. The upper and lower sides of the share and moldboard were made identical, so that either might form the sole. The moldboard was pivoted so that it might be thrown around from right to left or left to right.¹⁷

Newbold's plow, as we have seen, was rejected by the farmers. Until about 1820 they went ahead with their old-fashioned, clumsy "bull plows," and then, suddenly, in a single decade they abandoned their wooden plows and adopted those of cast iron. A committee of the Massachusetts Society for Promoting Agriculture reported in 1830 that at their first plowing-match held in 1817 "not one cast-iron moldboard plough was in our vicinity, if in the State." At the 1830 event all the plows which entered were of cast-iron.¹⁸

In Ohio the new plows were introduced about the year 1825, and by 1840 had displaced the old-style timber plows.¹⁹ In the west it was found that the cast-iron plows would not scour well, and this difficulty led to the invention about 1835 of the steel moldboard, which took a high polish and so did not clog in sticky soils.

SAVING OF LABOR EFFECTED BY NEW PLOWS.

The saving effected by the new plows in the labor of both men and draft animals was remarkable. At the plowing-matches held in connection with cattle shows by the agricultural societies, double teams of oxen with a man to drive and another to hold were at first used, but by 1830 a single plowman and one yoke of oxen was the standard outfit.²⁰ Wrote a contributor to *The Ploughboy*:²¹

"With the old ill-shaped ploughs, with wooden soles and mould boards, the strength of three horses were requisite for breaking up a piece of sward land. With the best constructed ploughs, now getting into use, more particularly those of Wood's and Burden's, two horses can easily perform the same labour; of course, with the use of such newly constructed ploughs, the farmer need keep but two horses, while with the old sort of plough he has to keep three. Here then is a saving of about \$35 a year, for such, at least, will be found the yearly expense in keeping a common working horse."

HARROWS AND CULTIVATORS.

The old triangular or "A" harrow was still used on fields obstructed with stumps and rocks, but on clear land a new invention, the two-horse hinged harrow, proved more economical. (See fig. 20.)

The cultivator, introduced about 1820, had largely supplanted by 1840 the plow and the hand-hoe on eastern farms in working between the rows of

¹⁶ N. Y. State Agric. Soc. *Transactions*, XXVII (1867), pt. I, p. 470.

¹⁷ Ohio State Bd. Agric. *14th Annual Report* (1859), p. 529. An illustration and description of one of these plows is given in *N. Y. Farmer*, VII (1834), p. 77.

¹⁸ *Massachusetts Agricultural Repository*, X, 233. See also Futhey and Cope, *Chester County, Pennsylvania*, 337, 340; Chase, *History of Old Chester, New Hampshire*, 427.

¹⁹ Burkett, *Agric. of Ohio*, 155.

²⁰ *New England Farmer*, IX (1830-31), 107; XVII (1838-39), 114.

²¹ II (1820-21), p. 331.

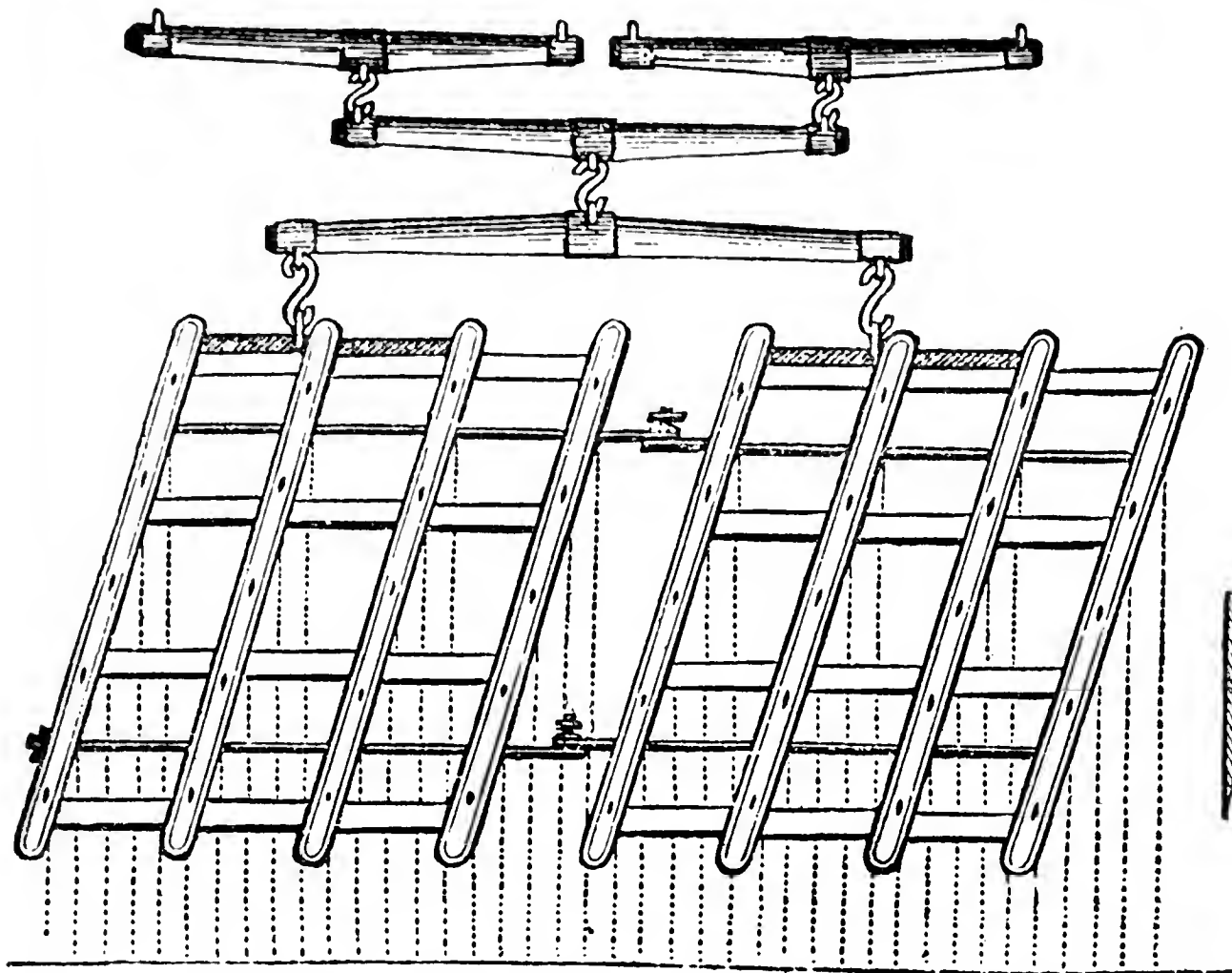


FIG. 20.—Improved harrow.

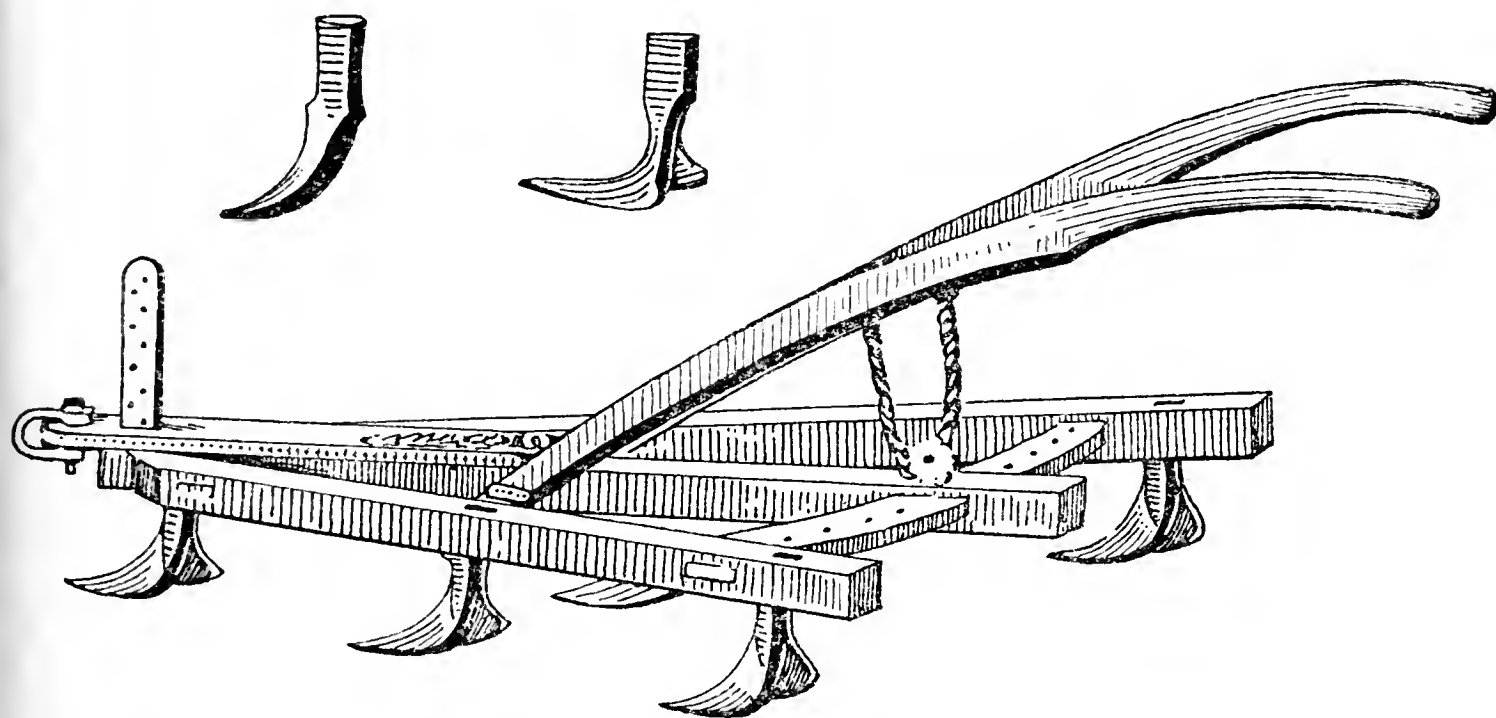


FIG. 21.—The cultivator.

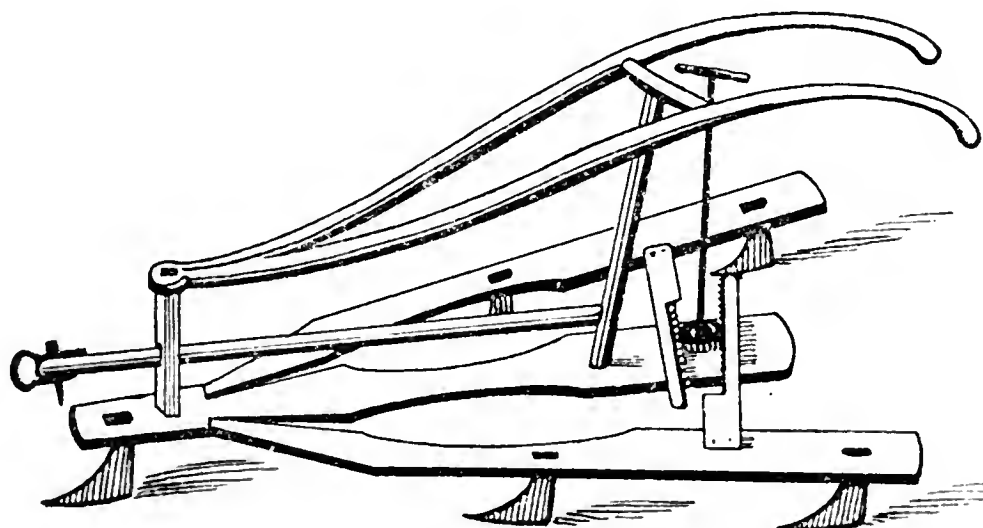


FIG. 22.—Improved expanding cultivator.

corn. The new machines were cheap, costing only \$15 or \$20, and although clumsy and heavy according to modern standards they were much lighter than plows, and, by doing away with hoeing, saved much hand labor. It was estimated, in 1826, that more corn could be tilled in a given time with one cultivator than with three plows.²² Two types of cultivators are shown in figures 21 and 22. The expanding cultivator, a later model, has a device for adapting it to crops planted at varying distances between rows. Note the short necks of the teeth on both models.

HARVESTING MACHINERY.

The farm-labor problem has always been most acute at harvest time. With the development of markets for grain and hay, it became obvious that the possibilities of profitable production were limited by scarce and dear labor at this critical period. Consequently the problem of the application of animal

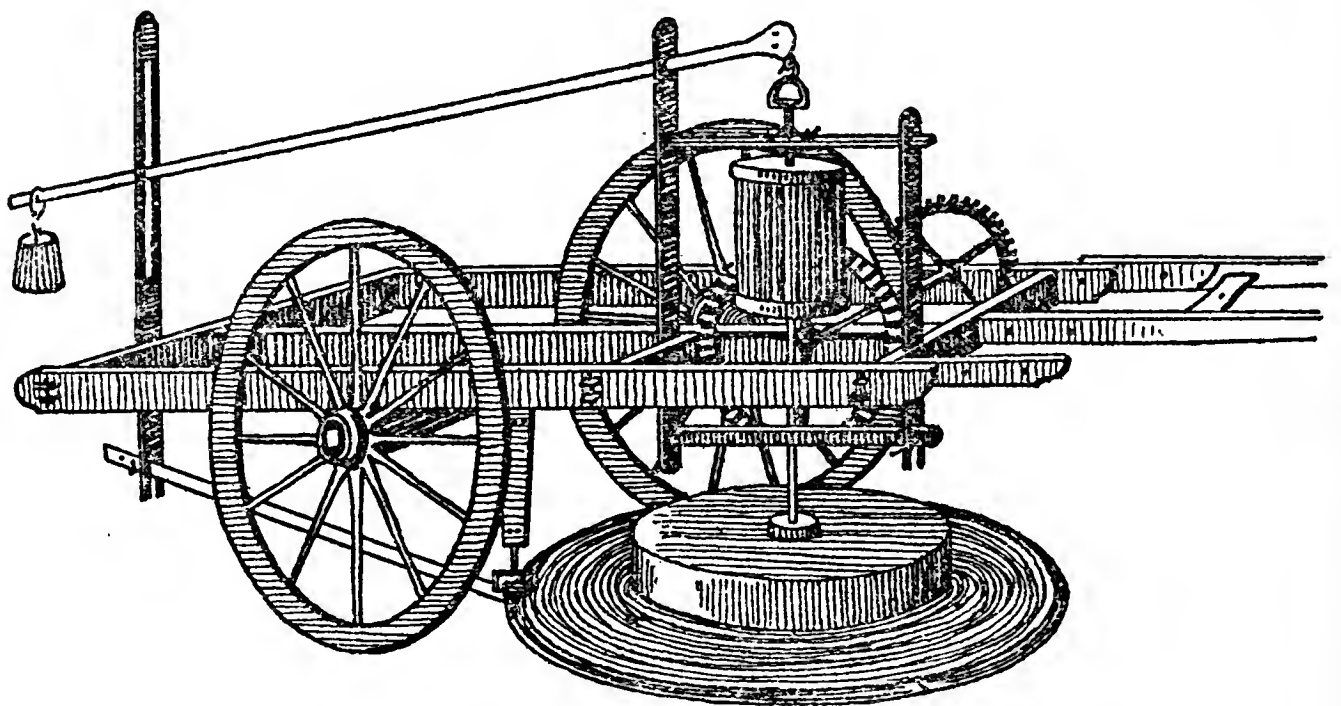


FIG. 23.—Bailey's mowing machine, 1823.

power to the slow and exhausting tasks of mowing, reaping, and threshing claimed much attention from inventors.

The substitution of the cradle for the sickle in reaping wheat and other small grains had been a notable accomplishment. But the cradle was still a hand tool. The invention of American horse-power mowing and reaping machines dates from patents issued as early as 1803, but not until a generation had passed were any effective devices introduced, and before 1840 their use was so limited as to have no effect on harvesting costs or crop acreage. A few mowing-machines were in use on river flats in Herkimer County, New York, about 1840. In New England they were not in use until after 1850.²³ Among the numerous impracticable machines which were put forward by their enthusiastic designers, one of the most interesting was that patented by Jeremiah Bailey, of Chester County, Pennsylvania, in 1822. (See fig. 23.) The cutting mechanism was a circular disk $5\frac{1}{2}$ feet in diameter (in later

²² *American Farmer*, VIII (1826), p. 55.

²³ See N. Y. State Agric. Soc. *Transactions*, I (1841), p. 138; *Mass. Bd. Agric. Annual Report 1856*, part I, p. 175; *Maine Bd. Agric. 18th Annual Report (1873)*, pt. I, p. 370.

models 7 feet), on the circumference of which a knife-edge was attached in sections. The machine was mounted on two wheels and drawn by a horse walking in shafts ahead on the left side. By gearing to one of the wheels the disk was made to revolve in a horizontal plane "with great velocity."²⁴

Meanwhile, in England the fundamental features of the modern reaper had been devised—the side-draft, the receiving-platform, and the reciprocating cutter-bar. In 1833 and 1834 two Americans, Obed Hussey and Cyrus McCormick, obtained patents on reaping machines which were destined to be of great significance in the later development of our agriculture. In this period the new reapers had hardly come into use, and consequently discussion of them is deferred to a later chapter.²⁵

HORSE RAKES.

The hay crop became of steadily increasing importance in the East, and although farmers must still be content to mow by hand, a machine for raking

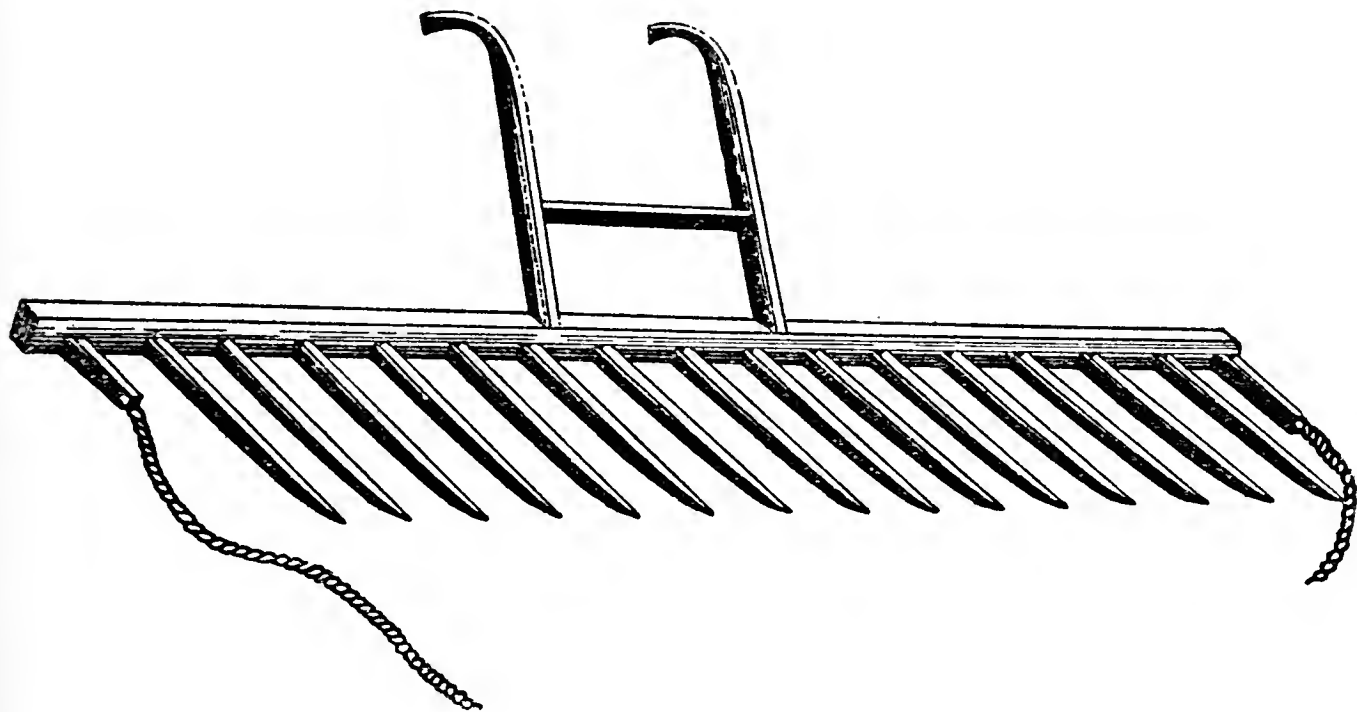


FIG. 24.—The horse rake.

by horse power gave them great assistance. (See fig. 24.) As originally constructed, it was simply a big comb 10 feet wide, with 15 or 18 teeth 20 inches long, which was dragged along the ground by a horse attached to the frame by ropes. Handles served to guide the rake, to lift the teeth over rocks or stumps, and to empty the accumulated hay. Such rakes were in use on Long Island as early as 1812, and in Massachusetts and Pennsylvania in 1820. The so-called revolving horse-rake had teeth on both sides of the scantling which formed the head. The latter was pivoted so that the rake might be emptied without stopping the horse. (See fig. 25.) None of the rakes in use before 1840 was mounted on wheels.²⁶

²⁴ *American Farmer*, V (1823), p. 199. A similar machine (Wilson's) propelled from the rear is described in *Maine Farmer*, V (1837), p. 238, and in *The Cultivator*, III (1836-37), p. 128.

²⁵ See Chap. XXIII, pp. 287 et seq.

²⁶ Descriptions of horse rakes are given in *Philadelphia Agric. Soc. Memoirs*, III (1814), p. 212; *Ploughboy*, II (1820-21), p. 310; *New England Farmer*, III (1824-25), p. 361; XII (1833-34), p. 393.

The saving in labor accomplished by these simple devices was remarkable. A writer to the *Pittsfield* (Massachusetts) *Sun*²⁷ claimed for the home-made rake which he described:

“It will enable one man, with a steady horse and boy, to perform at least as much work in gathering hay into winrow and pile as *six good men* can accomplish, and as clean as is commonly done in raking by hand.”

In the *American Farmer* for 1825²⁸ we read:

“The horse hay-rake is in very general use in most of the eastern counties of Pennsylvania and in New Jersey, with which they can rake as much hay, and glean the grain

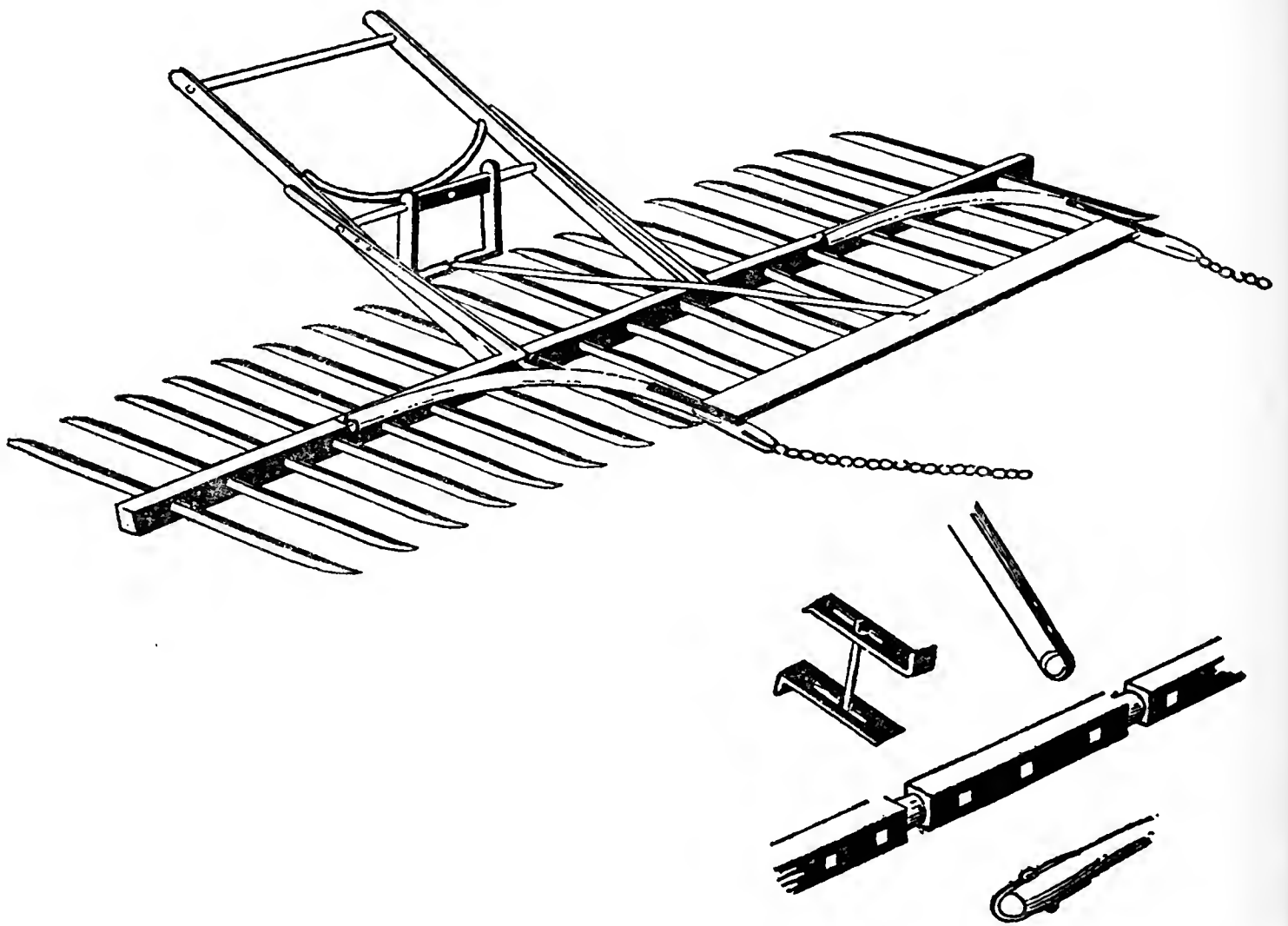


FIG. 25.—Revolving hay rake.

stubbles as fast as seven men can do with the hand rake—which is a saving in both time and crop. . . .”

A New York farmer, after 6 or 7 years of experience, estimated that one man and a horse rake could equal the work of 10 men with hand rakes.²⁹ The farmers of Massachusetts were slower in adopting the horse rakes than those in Pennsylvania and New Jersey. William Buckminster³⁰ doubted whether one farmer in a thousand in his State had ever seen one.

“As a wagon load of them was passing, last summer, to Boston, many inquired what those sharp wooden-tined things were made for, and whether they were not to dig potatoes with.”

²⁷ Quoted in N. Y. Bd. Agric. *Memoirs*, II (1823), p. 378.

²⁸ VII, 163.

²⁹ *Cultivator*, VI (1839-40), p. 121.

³⁰ In *New England Farmer*, XVII (1838-39), p. 114.

THRESHING MACHINES.

Threshing machines utilizing hand-power were introduced from Europe at the end of the eighteenth century and several of Scotch make were set up in 1802 in Pennsylvania, Delaware, and New Jersey. But since "they required more care than common labourers would bestow in feeding the machine to prevent its choking; and as common workmen could not repair it when out of order, and the maker was at a distance, they did not multiply. . . ." ³¹ Small hand-power and horse-power machines of a number of makes were advertised in the agricultural press in the years 1820 to 1830. The most successful and widely used seems to have been Pope's thresher. It utilized an

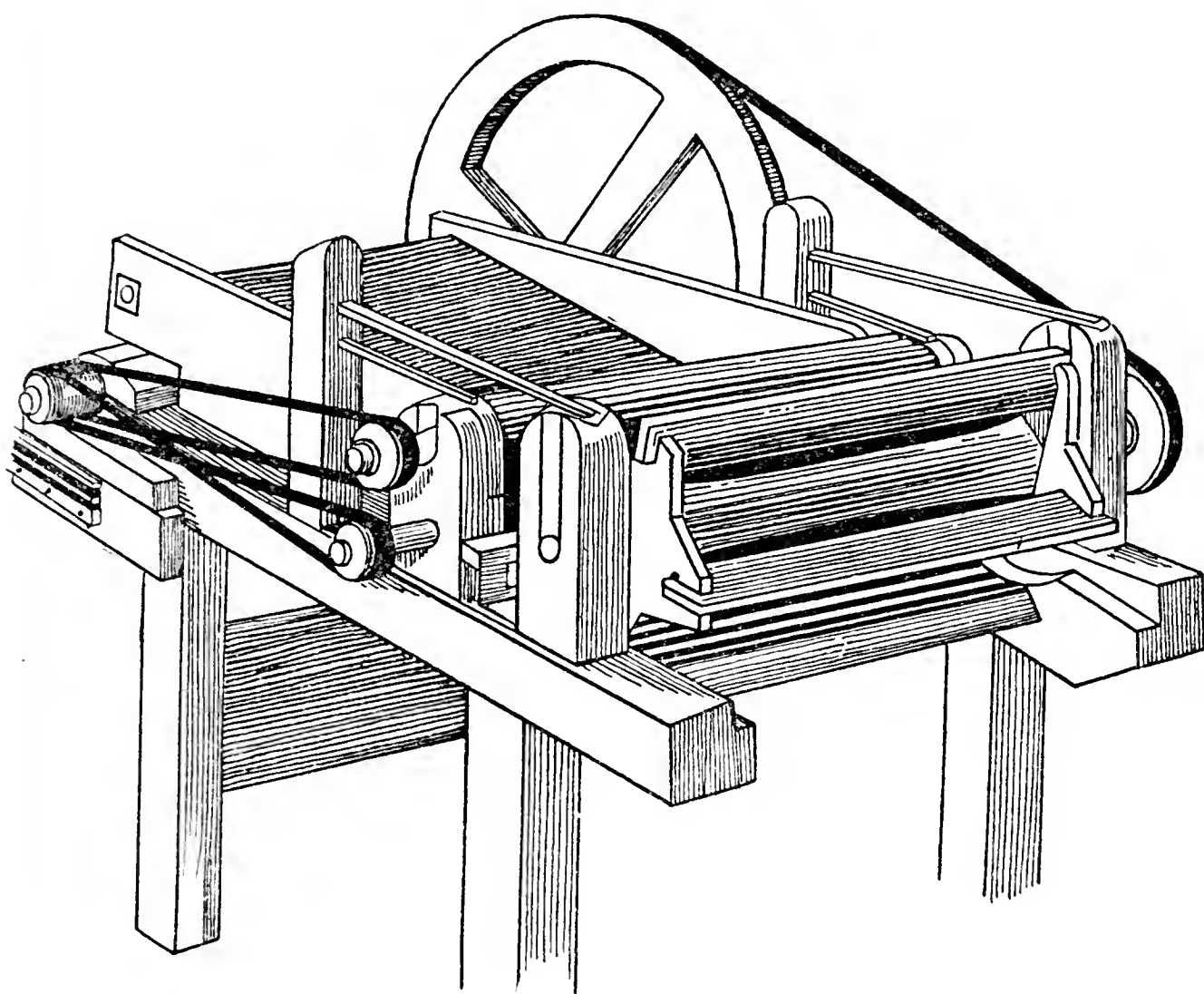


FIG. 26.—Pope's threshing machine.

endless belt to carry the grain under a revolving beater whose blows dislodged the wheat from the straw.

The best machine on the market before 1840 was Pitt's thresher, a cylinder and concave machine, invented by Hiram and John Pitt, of Winthrop, Maine, in 1836. (See fig. 51.) It was unique in combining the functions of thresher and separator. In *The Cultivator* ³² it was described as follows:

"It is a thrashing machine and fanning-mill combined. It thrashes, separates the straw from the grain, and cleans and delivers the latter, in the best order, for the sacks or bags—in *one operation*. It may be constructed for the power of one horse or more, though usually adapted for two horses, attached to an endless chain power, though it may be attached to other horse or propelling power; and the whole is so

³¹ Appendix to Address by James Mease, M. D., in Philadelphia Agric. Soc. *Memoirs*, IV, p. xxxiv (1818).

³² Vol. V (1838-39), p. 138.

portable, that it may readily be transported, horse-power and all, by a two-horse team, and put in operation on a twelve foot barn floor. The cylinder and bed are of cast iron, the former rendered doubly secure by strong iron bands. The teeth are wrought iron, secured by nuts, are not liable to do injury if broken, and are readily repaired.

"There are two prominent advantages in this machine, over others that we have seen in operation, viz.

"1. It thrashes, separates the straw, and perfectly cleans the grain, at one operation, demanding only the additional labor of a man to bag the grain as it comes from the machine. And,

"2. It may be used any where—under cover during rain, or in the open field during fair weather, as there is no scattering or loss of grain even in the field. This we consider an important advantage in the great grain-growing districts of the south and west."³³

The machine with the horse-power cost \$200 and had a capacity of 100 bushels of wheat per day. Other smaller machines ranged in price from \$75 to \$150.

In regions where wheat was an important crop, as for example in eastern Ohio and western New York, threshers were in general use by 1840 and in some counties little grain was threshed in any other way. A great saving of labor was effected by the application of animal power to threshing. A contributor to the *New York Farmer*³⁴ in 1829, wrote:

"One of the most slow, laborious, expensive and wasteful operations performed on a farm is that of threshing grain by the flail. If the laborers are hired by the day, week, or month, they will not generally, if they do the work well, average more than five or six bushels per day. If they are allowed one tenth, they will, indeed, often thresh out ten bushels; but the attendance and inspection of the owner is necessary to check the preponderating influence of self interest in slighting the work."

With horses one or two men and a boy could tramp out and winnow from 20 to 40 bushels in a day.³⁵

In addition to the saving of labor, the threshing-machines did their work more effectively, saving much grain that would have been lost by other methods. They worked more quickly, enabling the farmer to sell his grain in the fall if the market was favorable.

³³ See also *Maine Farmer*, IV (1836), p. 178; V (1837), pp. 73, 138.

³⁴ II, (1829), p. 161.

³⁵ Burkett, *Agriculture of Ohio*, 161; Conner, *Indiana Agriculture*, 8.

CHAPTER XVII.—LIVESTOCK—IMPROVEMENT AND SPECIALIZATION.

COMMERCIAL WOOL GROWING.

The development of wool-growing on a commercial basis was a spectacular incident of eastern agriculture in this period, directly resulting from the growth of a home market. Wool-growing for home consumption was a standard feature of seventeenth and eighteenth century agriculture, and coarse wool sheep of a hardy but rather unproductive type were kept on every farm. The inhabitants of the commercial towns bought their woollen goods from England at prices which prevented the establishment of American factories. In 1807 there began a period of 9 years when foreign trade was seriously interrupted, first by the embargo and non-intercourse acts and then by the War of 1812. The import of foreign wools was largely cut off, and prices rose rapidly. Under such conditions woollen mills sprang up in the Eastern States almost overnight. At first their demand was for the finer grades, and the Merino craze resulted. With the outbreak of the War of 1812, however, the coarser wools were largely used for army supplies. Wool production in general was stimulated, bringing the farmers more widely under market influences.

INTRODUCTION OF MERINO SHEEP.

Between 1800 and 1815, a noteworthy effort was made to improve the native stock by the importation of rams and ewes from Spain. The Spanish Merino sheep had long been famous for the weight and excellent quality of their wool, but on account of rigid exportation restrictions it had been practically impossible to bring representatives of the stock to this country. These restrictions were broken down about the year 1800, during the disorganization of the government of Spain following the Napoleonic invasion. Advantage of this state of affairs was taken by our ambassadors in Spain and France, Colonel David Humphreys and Robert Livingston, as well as by certain other Americans who were abroad at that time. They secured a few of these valuable animals, which they shipped back to America. The most important of the early importations was that of Colonel Humphreys, who in 1802 brought to his home in Derby, Connecticut, a flock of 91 sheep—21 rams and 70 ewes. Robert Livingston also sent a pair from France to his home in New York State.

LIVINGSTON'S DESCRIPTION.

It was probably with these animals before him that he penned the following description of the Merino breed.¹

"The race varies greatly in size and beauty in different parts of Spain. It is commonly rather smaller than the middle-sized sheep of America. The body is compact, the legs

¹ Livingston, *Essay on Sheep*, 31.

short, the head long, the forehead arched. The ram generally (but not invariably) carries very large spiral horns, has a fine eye and a bold step. The ewes have generally no horns. The wool of these sheep is so much finer and softer than the common wool, as to bear no sort of comparison with it; it is twisted and drawn together like a corkscrew; its length is generally about three inches, but when drawn out it will stretch to nearly double that length. Though the wool is, when cleaned, extremely white, yet on the sheep it appears of a yellowish or dirty brown colour, owing to the closeness of the coat, and the condensation of the perspiration on the extremities of the fleece. The wool commonly covers great part of the head, and descends to the hoof of the hind feet, particularly in young sheep; it is also much more greasy than the wool of other sheep."

Neither Livingston's nor Humphreys's sheep seem to have attracted much attention for a number of years. In the absence of woollen factories there was no market for fine wool, while for domestic manufactures the wool of the common sheep was more satisfactory as well as cheaper to produce. The establishment of woollen factories gave rise to the first demand for the finer grades of wool. The small available supply was soon exhausted and prices rose to unheard of figures. In 1810 pure-bred Merino wool sold for \$2 a pound and half-blood at 75 cents, whereas common wool would bring less than 40 cents.² In 1814 pure Merino wool at Steubenville, Ohio, sold for \$2.75 a pound.³ The public now became interested in Spanish sheep and prices responded immediately.

In 1810 Livingston sold four full-bred rams at \$1,000 apiece,⁴ and Colonel Humphreys disposed of two rams and two ewes for \$6,000.⁵ Importations were stimulated, and owing to the energetic efforts of the American consul at Lisbon, William Jarvis of Vermont, about 4,000 sheep were shipped in the years 1809 and 1810 from Spain to this country, over one-half going to New York and New England ports. It became so general a practice for ships touching at Spanish ports to bring back a few Merinos, that in little over a year 20,000 were landed here. The fabulous prices vanished, but the Spanish sheep still sold at between \$100 and \$300 each in Boston in 1810,⁶ and in 1813, in New York, a lot of 68 full-blooded ewes brought on the average over \$125 each.⁷

RAPID SPREAD OF MERINOS, 1810-1815.

With the encouragement of premiums from agricultural societies and from State legislatures the Merinos spread rapidly between 1810 and 1815.

"In Vermont, Windsor County was a famous centre. Here, among others, Consul Jarvis kept his flock of several hundred pure merinos, picked from those he had sent over from Spain. In Massachusetts, Berkshire County was the chief seat. In 1815 there were reported to be within a mile of Pittsfield over eight thousand sheep, at least half of which were three quarters merino or better. In Rhode Island, the islands of Narragansett Bay held many a valuable flock. Humphreys' was the most noted in Connecticut. New

² N. Y. State Agric. Soc. *Transactions*, XXII (1862), p. 66. Quoted in Wright, *Wool Growing and the Tariff*, 23, a book to which the author acknowledges indebtedness for many references and facts.

³ *Niles Register*, XXXVI, 399.

⁴ U. S. Bureau of Animal Industry, *Special Report on the Sheep Industry*, 144.

⁵ *N. Y. Gazette*, March 16, 1810, quoted in U. S. Bureau of Animal Industry, *Sheep Industry in the United States*, p. 167.

⁶ *Ibid.*, 198.

⁷ *Niles Register*, V (1813-1814), p. 207.

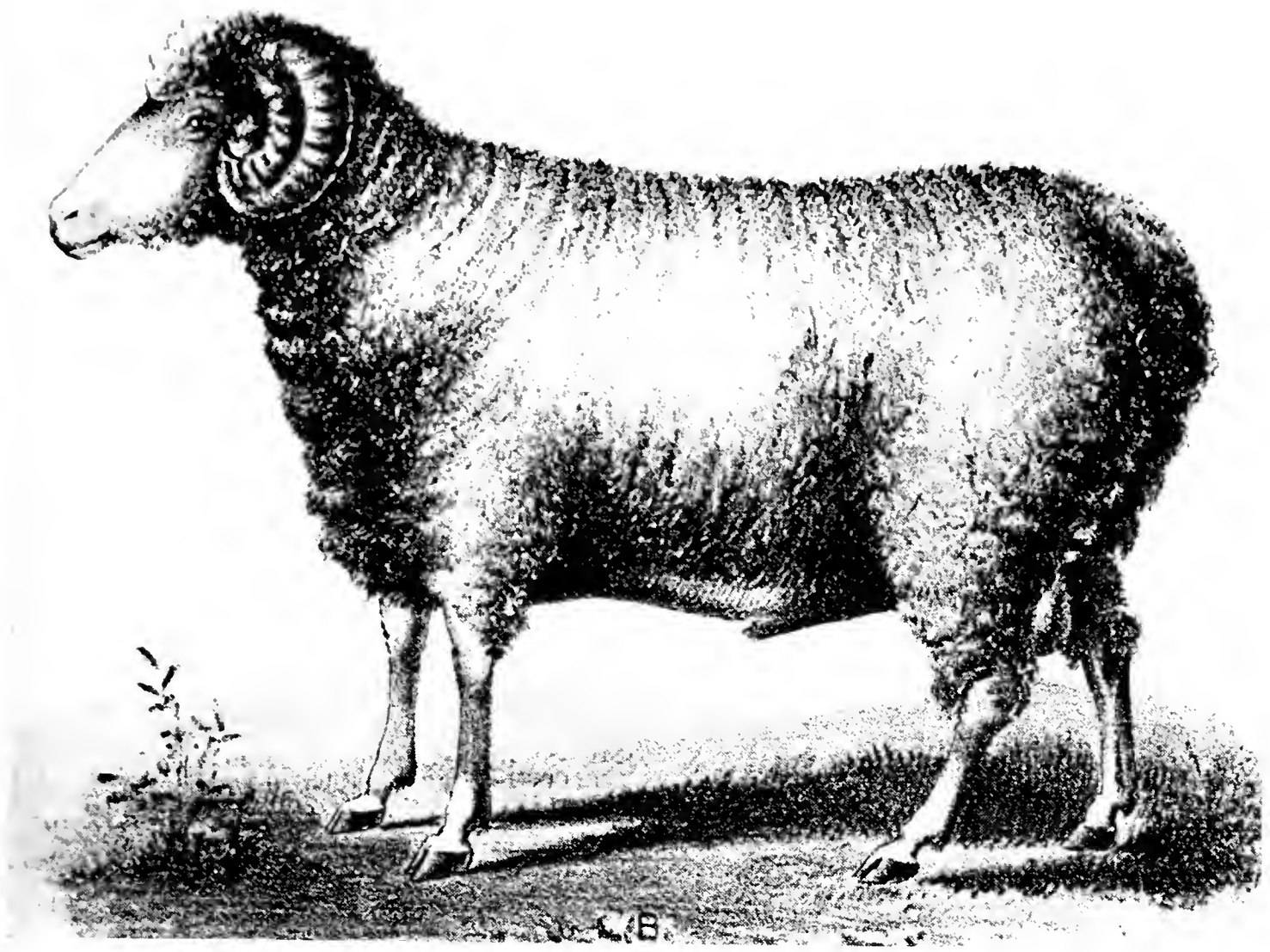


FIG. 27.—Spanish Merino ram (about 1810). (Reproduced from U. S. Bureau of Animal Industry, *Special Report on the Sheep Industry*.)

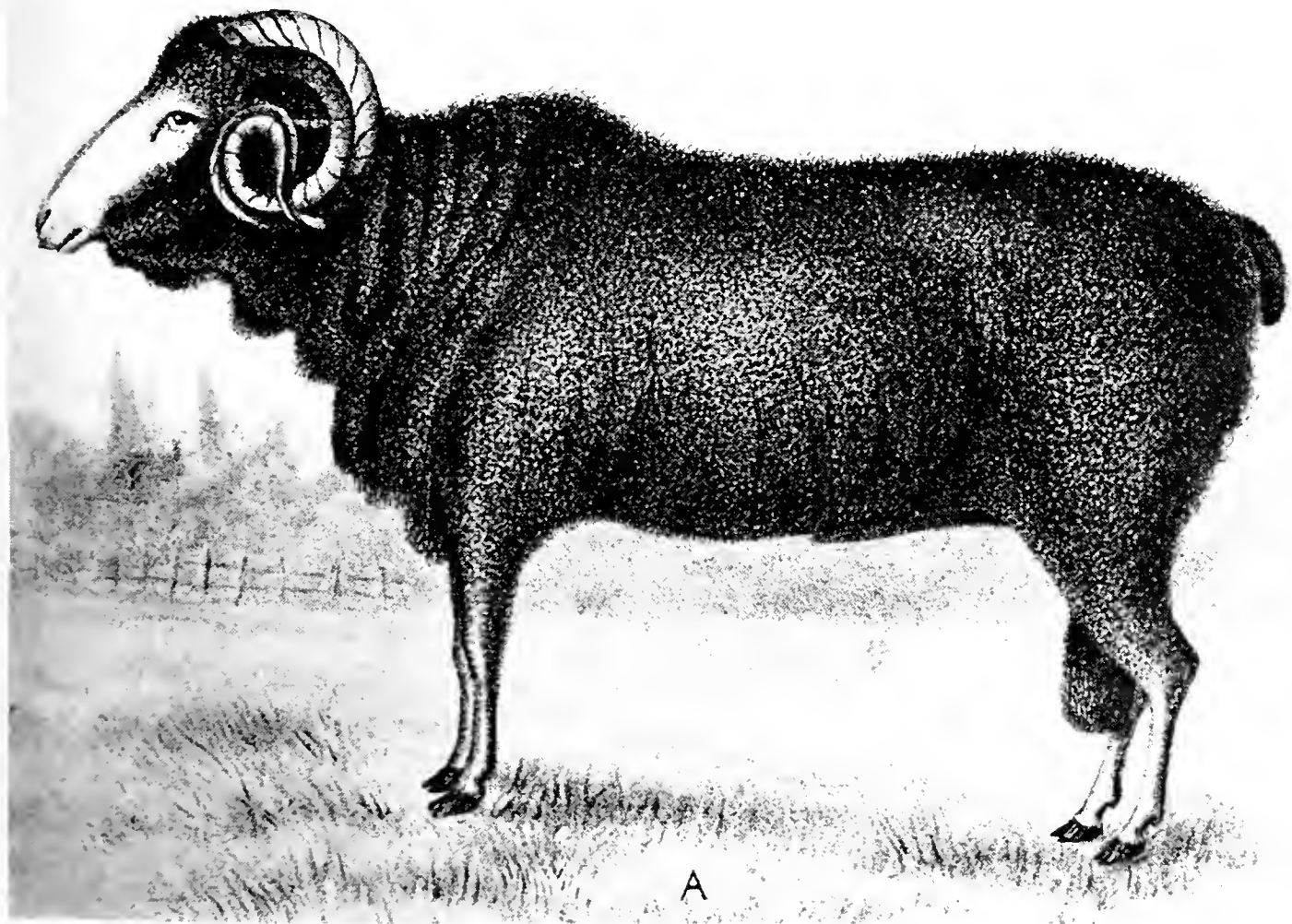


FIG. 28.—Electoral escurial (Saxony) ram No. 177 of Von Thaer's sheep-fold at Moeglin in Prussia. (Drawn from nature by Charles L. Fleischmann for U. S. Patent Office, 1847. Reproduced from U. S. Bureau of Animal Industry, *Special Report on the Sheep Industry*.)

York probably had more sheep than any other state, Dutchess County and Long Island being the homes of the best stock. In New Jersey, the returns to the state authorities in 1814 showed that out of a total of 285,049 sheep, 3,807 were pure merinos, while 25,826 more were grade merinos. In Pennsylvania, the prominent sheep districts were the locality about Philadelphia in the east and Washington County in the west. In Delaware and Maryland, they were to be found about Wilmington and Hagerstown respectively. In the West, there were excellent flocks in the blue-grass region of Kentucky, and a band of merinos had been carried to Indiana when Rapp moved his colony to New Harmony in 1814. The chief center, however, was about Steubenville, Ohio, where Wells and Dickinson had a large and valuable flock in connection with their woolen mill. The neighboring parts of Virginia and Pennsylvania, as well as Ohio, abounded in fine-wooled sheep.”⁸

END OF THE MERINO CRAZE.

The popularity of the Merino sheep came to a sudden end with the collapse of the woolen industry and the consequent fall in the price of fine wool.

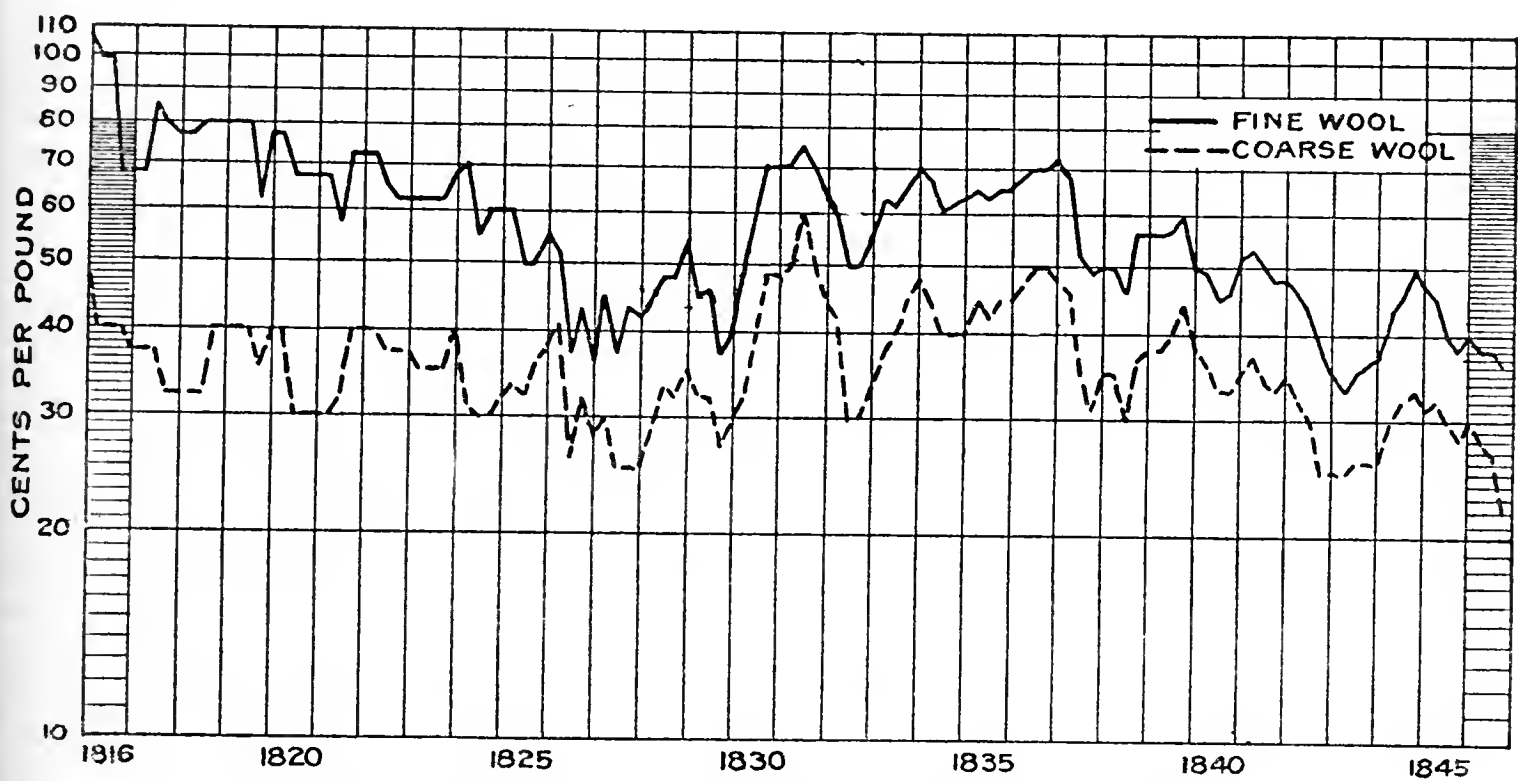


FIG. 29.—Wool prices in eastern markets, 1816-1846.

In January of 1816 merino wool was quoted at \$1.06 a pound in New York, and in October of the same year it had fallen to 68 cents.⁹ After fluctuating between that price and 80 cents it reached a new low figure of 62 cents in October of 1819, and two years later (July 1821) fell to 57 cents. Seeing their hopes thus disappointed, farmers turned against the Merinos with a disgust as unreasoning as had been their former enthusiasm. Many abandoned commercial wool-growing and ruthlessly sacrificed their stock. They almost drove them away from their farms.

“Thus entire flocks of the finest merino sheep were devoted to the knife, for no other reason but that, contrary to the wish and expectation of the owner, they would persist in eating. The extent of these sacrifices is scarcely credible. A very respectable butcher assured me, that he bought, for one dollar a head, a flock of merinos, among which was an imported ram, who the owner declared, and I have no doubt truly, had cost one thousand dollars. That extravagance has now passed.”¹⁰

⁸ Wright, *Wool Growing and the Tariff*, 29.

⁹ Prices Current in *N. Y. Shipping and Commercial List*, 1816.

¹⁰ *American Farmer*, IV (1822), p. 70.

Only the saner leaders of agricultural opinion ventured to say a good word for the despised breed, pointing out their undoubted merits and predicting with truth that they would eventually be accorded recognition as conferring great benefits on American wool growers.¹¹

IMPORTATION OF SAXONY SHEEP.

About 1821 the wool industry began to show signs of recovery and in the succeeding 5 or 6 years another fine-wool mania affected farmers in the Eastern States. This time it was the Saxony sheep which were the objects of speculation. In 1765 Spanish Merinos were taken to Saxony, where in the course of 60 years of careful breeding they had developed into an animal greatly different from the original stock. (See fig. 29.) Extreme fineness of wool had been developed, but at the sacrifice of size of carcass, weight of fleece, and constitutional vigor.

"These sheep, when introduced into the United States, lacked at least one-fifth, and often more, of the weight of the parent Spanish Merino, as it then was; they were longer legged in proportion to size, slimmer, finer boned, and thinner in the neck and head. At every point they gave indications of a more delicate organization. Their fleeces averaged from one and half to two pounds of washed wool in ewes, and from two to three pounds in rams."¹²

The first Saxony sheep arrived in Boston in 1822, but importations were not large until 1824, when 75 animals, ewes and rams, were sold at auction at Brighton market.¹³ Purchasers from New York as well as from New England attended this and subsequent sales.¹⁴ Saxony sheep were also imported at New York, so that the new breed received wide distribution. In 1826 there were landed at Boston, New York, and other ports 2,500 ewes, rams, and lambs. This marked the climax; the next year prices declined greatly, several cargoes selling for about \$15 a head, which was not enough to cover the costs of transportation. The discovery that extensive frauds were being imposed upon American buyers was partly responsible for the sudden collapse of prices. Another more important cause was the depression in woollen manufacturing in this country and the consequent fall in the price of fine wool. In January 1826, it had sold in New York for 55 cents; in January of the following year the price was 36 cents.¹⁵

INTEREST IN MUTTON TYPES—NEW LEICESTERS.

The depression in wool prices caused the farmers in the neighborhood of the largest towns, Boston, Philadelphia, and New York, to turn their attention to the production of mutton rather than wool. For this purpose they improved the native breed by crossing their ewes with English rams of the so-called Bakewell or New Leicester breed. In 1820 the latter were said to be "extensively diffused in various degrees of blood throughout the states of

¹¹ Address of John Lowell, *Mass. Agric. Repository*, V (1819-1820), 230; Address of R. Sullivan, *American Farmer*, III (1821), p. 58.

¹² Randall, *Fine Wool Sheep Husbandry*, 17.

¹³ 4th Report, *Agric. of Mass.* (1841), p. 450.

¹⁴ *Ibid.*, III (1824-25), 413; IV (1825-26), 391.

¹⁵ Wright, *Wool Growing and the Tariff*, 347.

Pennsylvania and New Jersey.”¹⁶ These sheep were described by J. H. Powell,¹⁷ a progressive Pennsylvania farmer, as follows:

“The different flocks of sheep called Bakewell, which are found in New Jersey, Pennsylvania, Delaware and New York, are a mongrel race, derived principally from an importation of Dishley, Teeswater, and Southdown sheep; or from a few Teeswater sheep, which were carried to New York in a prize, during the late war. The characteristics of these breeds, are occasionally detected in individuals of this race. The smutty faces, finer wool, and smallest frames, are indicative of the Southdown origin; the largest frames, coarser bone, heavier offal, and larger heads, mark others of the Teeswater race; the long wool, often twisted at the ends, the narrow faces, broad backs, short legs, and fine bone, prove the presence of the Dishley, or Bakewell blood.”

SUMMARY OF PROGRESS TO 1830.

The year 1830 marked the close of the preliminary period of commercial wool-growing in the East a period of experiment, of frantic enthusiasm followed by equally irrational despair. The number of sheep had increased, especially in the West, but this increase had been mostly in the common variety, whose wool was in constant demand for household industries. The violent fluctuations in the woolen manufacturing industry had been responsible for equally violent variations in the price of the raw material. The experiments with fine-wool sheep had been highly speculative, and perhaps on that account they have been given undue importance. Wright's conclusion is that on the whole the wool-growing industry made quantitatively little advance. As a result of the successive reactions against the Merino and the Saxony sheep, little progress had been made in building up pure-bred flocks. But the dispersion of the pure breeds had led to the improvement of the quality of the common or native animals. The latter still supplied the raw material of the household industries, moving westward with the expansion of population and of farming.

CLIMAX OF WOOL GROWING IN THE EAST.

In 1830 began the period of greatest prosperity in Eastern wool growing. Woolen manufacturing was at last firmly established and, encouraged by tariff protection, increased its output and demand for raw material. The total consumption of wool in the factories was estimated in 1837 at 38,300,000 pounds, of which about 10,000,000 pounds was of foreign origin.¹⁸ Although imports of raw wool increased rapidly, the foreign shipments were confined principally to coarse wools from South America and from Turkey and its Mediterranean dependencies. (See fig. 30.) Shipments from Ohio and States west of the Alleghenies had begun, but were not large enough to cause eastern growers serious concern. As a result, wool prices in the East rose rapidly and continued high. (See fig. 29, p. 219.) Merino wool, which during the years 1825 to 1829 had been selling for between 40 and 50 cents a pound, reached 70 cents in October 1830. The average of the quarterly quotations from

¹⁶ *Ploughboy*, II (1820-21), p. 241.

¹⁷ In *American Farmer*, VII (1825), p. 316.

¹⁸ Benton and Barry, *Statistical View*, etc., quoted in Wright, *Wool Growing and the Tariff*, 85.

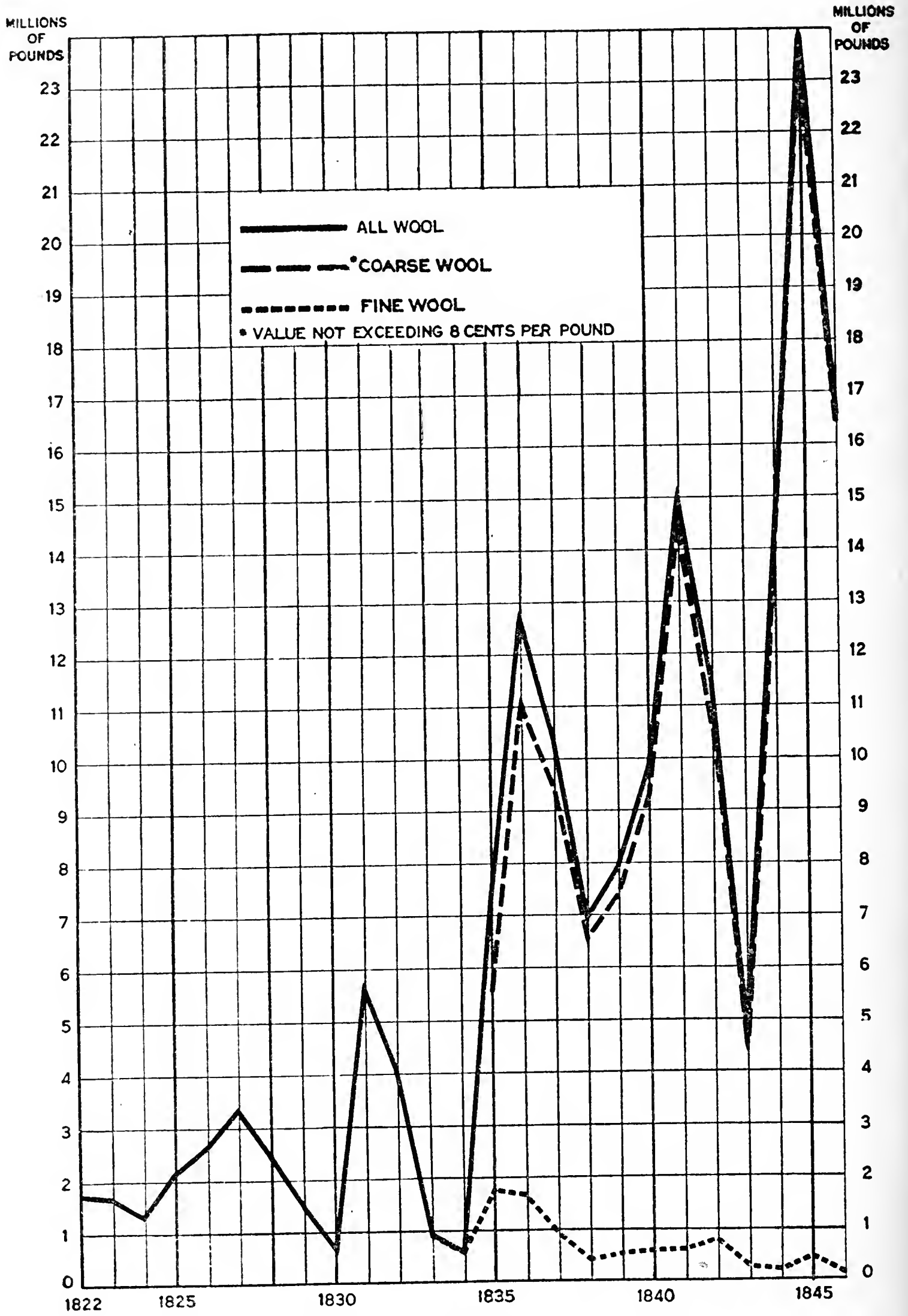


FIG. 30.—Imports of wool (1822-1846), U. S. Commerce and Navigation Reports.

then until January 1837 was 65 cents; at the later date the price was 72 cents. Common wool followed very closely the fluctuations in the fine grade.

With such encouragement wool growing flourished everywhere, and in the East the number of sheep reached its maximum. There was renewed speculative activity in the production of fine wool from Saxony sheep, but the common breed also were not neglected. In 1840 the census estimate fixed the number of sheep in the country at 19,300,000, of which nearly 60 per cent were in New England and the Middle Atlantic States. With the increase in numbers came also increased tendency to specialization. Before 1830 it had been observed that the rising price of land around Boston had caused a movement of sheep-raising westward into the interior.¹⁹ By 1840 a well-defined wool-growing area in New England had developed in Vermont and the Berkshire region of western Massachusetts and Connecticut. In Vermont official returns indicated an increase of 1,000,000 sheep in the years 1832 to 1837, with a decrease of 40,000 head of cattle in the same period.²⁰ In Berkshire the success of wool-growers was causing decreased attention to dairying and tillage.²¹

THE IMPORTATION OF ENGLISH CATTLE.

The leadership in the improvement of cattle, as well as sheep, came from a few wealthy men who made a hobby of progressive farming. Their attention was directed to the importation of representatives of English stock rather than to the betterment of the "native" or common animals by selective breeding. A few English cattle were brought to this country before 1800, probably of the Lancashire or Bakewell breed, but the period of greatest activity dates from about 1820. Between that date and 1840, representatives of all the important English breeds had been introduced, including Herefords, North Devons, Alderneys, and Guernseys and, most important of all, the Improved Durhams or Shorthorns. They were kept with great care by their owners and exhibited frequently at the annual cattle shows, where they attracted much attention. Auction sales of pure-blood stock were social events in the neighborhood of New York and Philadelphia, where distinguished city folk vied with one another in paying high prices for animals of exceptional pedigrees. The efforts of cattle-breeding enthusiasts in this period were directed chiefly to building up herds of pure-blood stock. The improvement of native stock by judicious crossing of breeds seems to have hardly begun before 1840.²²

THE NATIVE CATTLE.

The cows of the common or so-called native breed showed little improvement over their colonial ancestors. Those who fattened cattle found it profitable to provide comfortable shelter and nutritious rations, but the market influences seem not to have reached back to the breeders. Except in a few instances, no attempt had been made to improve stock by selection in breeding; often

¹⁹ *Mass. Agricultural Repository*, X (1828-32), p. 125.

²⁰ *The Cultivator*, VI (1839-40), p. 102.

²¹ *2d Report, Agriculture of Massachusetts* (1838), p. 136.

²² *Connecticut State Agric. Soc. Transactions* (1854), p. 99.

the likeliest heifers were sold to the butcher. In winter they stood in cold stables, often with the snow piled on their backs and with no fodder but hay. Colman²³ exclaimed with the indignation of a humanitarian as well as of an economist:

"The result is what might be expected; and there is nothing more striking nor more painful to a benevolent observer, than the withered, lean, lanthorn-visaged condition in which the stock of the farmers of New England generally come out in the spring. Even their milch cows, who pay for their keeping in the most honorable manner, and whom the farmer should as little think of stinting and half-starving as he would his children, since without them, he could not raise his children, are treated with a severity, which admits of no apology; and which is as inconsistent with the farmer's true interests, as with the dictates of common justice and mercy."

A contributor to the *Cultivator*²⁴ described the native cows in more careful phrases:

"They are a mixture of every breed, and the intelligent and observing breeder, sees in them traces of almost all the English varieties, such perhaps as they were before science and attention had improved them, such as might offer to the American breeder the original materials of their most improved and valued stock, but requiring more time and perhaps more talent, skill and attention, than the American farmer would be willing to bestow on the subject, and yet necessary to enable him to arrive at the same results. This mixed breed are not very celebrated for any thing; some of them are good milkers as far as quantity is concerned, but as to quality of the milk and aptitude to fatten, they generally fail. Their calves are of diminutive size, rarely giving more than 20 lbs. per qr. when killed, at four weeks old; and if reared, of slow growth, seldom coming in till the third year, and then requiring two or three years more to give them standing and character, such as it is, in the dairy. As to their characteristic marks, they are small, short bodied, thin and coarse haired, steep rumped, slab sided, having little aptitude to fatten, or to lay the fat on the right place."

The weights of cows when slaughtered averaged 450 pounds; steers weighed 600 pounds and oxen 875 pounds.²⁵

BEEF PRODUCTION IN THE CONNECTICUT VALLEY.

Beef production as a specialized industry showed considerable expansion in the East in this period, with increasing concentration in the areas in which it was already well established by 1800, viz.: the Connecticut Valley and the southeastern counties of Pennsylvania. At the beginning of the nineteenth century, grazing had been accounted a profitable business in any of the "interior counties" of Massachusetts, but during the years 1800 to 1840 the competition of other lines of farming, wool-growing in the western counties and market gardening in the eastern led to increasing concentration of beef-fattening in the counties bordering on the Connecticut River. In 1817, Dickinson wrote of Deerfield, Massachusetts:²⁶

"... 500 of the finest cattle, mostly purchased of the farmers in the upland towns, are annually fed, in the best manner, from the beginning of December to May, the weight of which may be computed at 550,000, and the proceeds of their sale in market, at \$40,000, with a profit of about one half the amount."

²³ *Addresses at New Haven, Norwich and Hartford, Connecticut, in 1840*, p. 57.

²⁴ *The Cultivator*, V (1838-39), p. 23.

²⁵ Estimates of the official reporter of the Brighton Market in *4th Report, Agriculture of Massachusetts* (1841), p. 302. Other estimates are to be found, *Ibid.*, p. 51, and in *American Farmer*, VII (1825), p. 113.

²⁶ *Description of Deerfield*, 5.

The fertile "intervalles" or bottom lands of the river supplied an abundance of hay, which was supplemented by cornmeal, peas, oats, and potatoes. Experiments were made with rations of broom-corn seed and oil-cake. In Franklin County, Massachusetts, beef fattening, chiefly stall feeding, was the chief interest of farmers in 1840. Colman described the business as follows: ²⁷

"The fatters of beef depend, for their cattle to be stall-fed, upon animals brought from Vermont, New Hampshire, and New York. In these cases the experienced and practical have great skill and shrewdness in selecting small-boned, neat, and thrifty animals as the best for their purposes. Many of them find great advantage 'in turning their cattle soon,' rather than keeping them on hand a long time. After graduating a class early in the season, they go into the neighboring hill-towns and purchase fat cattle already far advanced for the market, and finish them so as to have another class to send off in the spring. These cattle are generally fed upon hay and potatoes in the hill-towns, where corn is not raised to any considerable extent as in the river-towns; but when brought to the river-towns they are fed almost exclusively upon hay and meal, and the change of diet greatly favors their thrift. Another kind of stock much approved for stall-feeding are three and four year old steers, which are kept well in the winter upon good hay; and for about two months in the last of the winter and first of the spring have a moderate allowance of provender, such as the meal of Indian corn, or corn and oats or pease and oats ground together, and are then turned into the pastures as soon as they can get a living. In a good pasture these animals do well, and are generally sent to market in June and July, when they command a good price."

At the end of our period the farmers of Franklin County were discouraged. The price of stock cattle in the fall was as high per hundred pounds as that obtained for fat steers in the spring, and the markets were capricious and uncertain. The farmers suspected the drovers, who took their cattle on commission,²⁸ and the butcher who bought them, of collusion and fraud, which they lacked effectual means to prevent. They were inclined to feel fortunate if at the end of the season's operations they were able to pay the notes given to local banks for the purchase of stock. Allowing current prices for the grain and hay consumed their accounts showed production at less than cost, but as Colman pointed out, they did not credit the cattle account with the value of the manure produced and returned to the farm.

THE BRIGHTON CATTLE MARKET.

Connecticut Valley cattle were occasionally marketed in New York, but most of them were driven to the historic Brighton market just outside of Boston. In this town a weekly cattle fair had been held since Revolutionary days.²⁹ Farmers, drovers, butchers and commission men met there on Mondays to buy and sell. Wrote Colman: ³⁰

"Cattle, sheep and swine are brought here from the interior of the State, from Maine, New Hampshire, Vermont—from New York, and sometimes from Pennsylvania, Ohio, Indiana and Kentucky. Ordinarily few sheep are ever brought to market except it be wethers fatted or to be fatted. Great numbers of pigs and shoats are driven here to be sold for keeping, but except an occasional drove from some distillery establishment few fat hogs are sold here either alive or dead. Nor is it any

²⁷ *4th Report, Agric. of Massachusetts* (1841), p. 54.

²⁸ The cost of droving to Brighton was \$2 per head plus the loss of about 100 pounds in weight.

²⁹ The picturesque features of the fair were described by Hawthorne in his *American Note Books, Collected Works* (11th ed., 1887), IX, p. 248.

³⁰ *4th Report, Agriculture of Massachusetts* (1841), p. 297.

mart for horses, though occasionally they are brought here for sale. The cattle principally consist of young stock for wintering, working oxen, milch cows with their calves, and fat cattle for barrelling and for the retail market in the city and vicinity. The cattle for barrelling are taken at once to the large slaughtering and packing establishments, where they are disposed of accordingly; and fat cattle are likewise purchased for the butchers by the slaughterers, who kill and dress for one dollar per head with the customary perquisites, or else purchase and kill on their own account, and supply the marketmen in the city and vicinity with such beef and with such amounts of beef as they may desire. The drover generally waits for two or three days until he gets the returned weight of his cattle after being slaughtered, and receives his money. The butchers who come from a distance in order to get supplies for the small and remote villages and towns, of course drive their cattle to their respective homes to be slaughtered; and large numbers go from hence to Lowell, New Bedford, Fall River, Providence, R. I. and other considerable towns. The number of head of cattle, of all descriptions, brought here frequently exceeds eight thousand on a market-day. Five thousand sheep have sometimes been driven there in a single day. The cattle are often sold on the hoof—which is, on many accounts, a preferable mode for both parties, as it leaves no room for fraud or suspicion of fraud in regard to their weight.”

BEGINNING OF MARKET INFORMATION SERVICE.

Beginning in 1830, market reports were issued weekly, giving the number of animals of various kinds sold and notes on the average prices prevailing. The reports appeared Tuesday morning in the Boston papers and were widely copied in journals having a circulation throughout the state.

“Before this arrangement, farmers and drovers in the interior depended on mere rumors, which seldom reached them in season to regulate their movements in regard to the market, and were not always to be relied on. The exact reports now given, are received with confidence, and are of great importance to the farmers and drovers. They now learn whether the markets are glutted or thin, and the prices which they may calculate upon. This saves them from many mistakes and disappointments.”³¹

A typical report is that of Monday, April 3, 1837.³²

“At Market 280 Beef Cattle, 40 pairs Working Oxen, 235 Sheep and 760 Swine.

“Prices—*Beef Cattle*.—An advance was realized and we advance our quotation viz. extra at \$9.50; first quality \$8.50 a 9.00; second quality \$8.00 a 8.50; third quality \$6.75 a \$7.75.

“*Working Oxen*.—A large proportion were ordinary and purchasers were unwilling to pay the prices asked. We notice a few sales only viz: \$80, \$85, \$100, and 115.

“*Sheep*.—We notice a lot taken at \$5.25 each, a lot at \$8.00 each, a lot of 100 from Conway at \$11 each and a lot from Princeton at \$20 each.

“*Swine*.—We notice the sale of several lots at 11½ for sows and 11½ for barrows. At retail 11½ a 12½ and 13.”

The average number of animals of various kinds sold each year at Brighton in the 10 years 1831 to 1840 was as follows: beef cattle, 36,600; stores, 12,900; sheep, 97,793; swine, 22,700.³³

WESTERN CATTLE IN EASTERN MARKETS.

The occasional presence of cattle from Kentucky, Ohio, and Illinois at Brighton in the years 1830 to 1840, indicates the beginnings of western competition. Such competition was sporadic, however, occurring only when the

³¹ 4th Report, *Agriculture of Massachusetts* (1841), p. 301.

³² Quoted in *New England Farmer*, XV (1836-37), p. 311.

³³ 4th Report, *Agriculture of Massachusetts* (1841), p. 302.

New York market was overstocked.³⁴ Just before 1840, the railroads were being used occasionally to transport livestock to Brighton, a few yokes of very large cattle, a drove of sheep, and, in extremely cold or hot weather, considerable numbers of swine, but for regular shipments freight rates were too high.

CATTLE GRASS-FATTENED IN MAINE.

Grass-fattened cattle and sheep were driven from Maine to the markets at Salem and Boston, beginning about 1820 at the rate of several thousand each year. The cattle were sometimes taken "on drift," the commission for driving and selling amounting to \$2 per head. The quality of Maine beef, if the following description is accurate, could not have been highly regarded. The editor of the *Maine Farmer*³⁵ wrote:

"Much of the beef made in this vicinity is from cows which, through age, have become unfit for the dairy, and from oxen which are worn out with hard labor. It is customary to milk the cows until August or September, and as soon as they can be dried of their milk, begin to feed them, first with green corn stalks, small corn, potatoes and meal; and the value of the feed given them is generally much more than the value of the beef when slaughtered. The oxen intended for beef are generally worked in the spring as long as they are able to drag the plough, because it is the last springs work which they will do, for the owner intends to fatten them."

The prices received by Maine farmers for their stock in 1835 and 1836 were: For 1-year-olds, \$3 to \$5; 2-year-olds, \$7 to \$10; 3-year-olds, \$10 to \$15; cows, \$10 to \$12; oxen, per pair, \$35 to \$40.³⁶

CATTLE FATTENING IN CHESTER COUNTY, PENNSYLVANIA.

In southeastern Pennsylvania, especially in Chester County, cattle were fattened for the Philadelphia and New York markets. As early as 1819 the business was so prosperous that grazing farms in the neighborhood of Philadelphia were selling at from \$100 to \$300 per acre.³⁷ The stock came from many sources, from Maryland, Virginia and South Carolina; from Ohio, and from northern and western New York. William Darlington³⁸ wrote in 1828:

"They [the stock cattle] are of various sizes, and the average weight, in a lean state, may be estimated at about 500 pounds, and when killed for beef, at about 700 or 800 pounds. The greater portion are fattened on pasture during the summer, but for fattening large oxen a longer time is required, and they are fed most successfully during the winter season. These are usually fed about one year, running on good pasture through the summer, and stall-fed, through the winter, on meal, made of maize and oats ground together."

DAIRY PRODUCTS—CHEESE, BUTTER, MILK.

The readjustments in eastern farming caused by the rise of manufactures are clearly evident in the regional distribution of dairy products. In the

³⁴ 4th Report, *Agriculture of Massachusetts* (1841), 305; *New York Farmer*, III (1830) p. 146; *New England Farmer*, XIII (1834-35), p. 354.

³⁵ I (1833), p. 51.

³⁶ *Maine Bd. Agric. 19th Annual Report* (1874), p. 275.

³⁷ Johnson, *Letters from Pennsylvania*, p. 76.

³⁸ *American Farmer*, X (1828), p. 66.

neighborhood of the larger cities the sale of milk had largely supplanted the making of cheese, and of butter as well, except for small amounts of the fresh article for immediate sale. A great many farms within a distance of 12 to 14 miles of Boston were selling milk daily to the city. The larger producers, those with 40 or more cows, evidently did their own peddling; the smaller farmers, keeping 4 or 5 cows, sold their milk to dealers.³⁹ The winter ration included carrots and potatoes as well as cornmeal and hay. Experiments in soiling had been made, but the practice was not generally adopted.⁴⁰

In the neighborhood of New York there were a number of large milk farms keeping several hundred cows each, some of them in connection with distilleries, from the waste of which they received a large part of their fodder. In general, the milk furnished to New York did not have a high reputation and complaints of adulteration were frequent.⁴¹

The production of butter and cheese as a commercial industry was found in 1840 chiefly north of New York city, in the Berkshires, and in a newly developed section in central New York State. In these areas dairying was a safe and profitable business. With increasing urban concentration and a rising standard of life in the cities, their markets were steadily expanding, and in addition they furnished most of the cheese consumed in Pennsylvania, along the southern seaboard, and in the Mississippi and Ohio Valleys.⁴² In the Berkshire region of western Massachusetts and Connecticut the manufacture of butter and cheese for sale furnished strong competition with wool-growing for the farmer's land, labor, and capital. The market for dairy products was New York, accessible via the Hudson River. Colman's study⁴³ of two Berkshire towns showed that on 45 farms in Cheshire, 913 cows were kept which produced for sale 311,050 pounds of cheese and 19,050 pounds of butter. In Pittsfield, 221 farms kept 812 cows, which produced 58,046 pounds of butter and 26,048 pounds of cheese.

WESTWARD SHIFT OF DAIRYING.—DEVELOPMENTS IN CENTRAL NEW YORK.

In New York State, Orange and Ulster Counties had long been producing high-grade butter and cheese for market.⁴⁴ With the opening of the Erie Canal a new area of dairying developed in the Mohawk Valley, concentrated chiefly in Herkimer and Oneida Counties, but extending also to some parts of Fulton and Saratoga Counties. Since about 1780 the Mohawk Valley had been one of the chief wheat-producing areas of the north. The transition from wheat-growing to dairying after 1825 was the result partly of the competition of Genesee wheat, now cheaply transported via the canal, in the New York market, and partly of the ravages of the grain worm, which first appeared there between 1825 and 1830. The canal, moreover, afforded the Mohawk

³⁹ 4th Report, *Agriculture of Massachusetts* (1841), pp. 198, 252.

⁴⁰ See letter of Hon. Josiah Quincy, Dec. 27, 1815, in *American Farmer*, II (1820-21), p. 292.

⁴¹ 4th Report, *Agriculture of Massachusetts* (1841), p. 253.

⁴² *The Cultivator*, III (1836-37), p. 41.

⁴³ 2d Report, *Agriculture of Massachusetts* (1838), pp. 59, 106-122.

⁴⁴ John Burroughs, in *My Boyhood*, pp. 11-23, describes the production and marketing of butter in Ulster County about 1840.

Valley farmers cheap transportation for their cheese. From six towns the exports of cheese for 1832 were estimated at 1,000 tons; from one town alone about 400 tons were sold.⁴⁵ Only in one town, Steuben, was butter produced for market. The peculiar ability of the Welsh immigrants who settled there was probably the cause of its specialization. Although a small town (2,000 inhabitants, 1840), in 1832 it sent 150 tons of butter to the New York market. Marketing conditions were good; large dealers of New York and other cities came to select and purchase their supplies.

One of the results of the growth of commercial dairying in this section, besides a higher income for farmers, was a tendency to larger-scale production and an increase in the size of farms. A pioneer in the industry wrote to *The Cultivator*:⁴⁶

“Most of the little farms are now so amalgamated, that it is said to be difficult to sustain district schools, and open roads in winter, or hire any laborers by the day in some sections. . . .”

OUTPUT OF DAIRY COWS.

Judging by current estimates, the productivity of dairy cows had considerably increased between 1800 and 1840. At the earlier date, according to answers to the inquiries of the Massachusetts Society for Promoting Agriculture, 70 to 100 pounds of butter or from 50 to 150 pounds of skim-milk cheese were considered fair amounts for ordinary cows.⁴⁷ About 1830 it was estimated that a milch cow of medium quality in Massachusetts would give 1,500 quarts of milk in a year, which would make 166 pounds of butter or 375 pounds of cheese.⁴⁸ In New York State, about 1835, a good cow “under proper management” was expected to produce 200 pounds of butter a year or between 300 and 400 pounds of cheese. One farmer in Herkimer County produced 32,000 pounds of cheese from 78 cows, averaging 410 pounds each.⁴⁹ The increase in productivity is explained partly by better food and shelter and partly by better management of calves, taking them earlier from their mothers.

SWINE SHOW MARKED IMPROVEMENT.

In no class of domestic animal was such striking improvement effected as in swine. Coming early to maturity, they are easily modified in type by selective breeding and consequently the results of crossing with improved breeds imported from England, China, and Spain were soon obvious. The introduction of the Woburn or Bedford hogs from England dates from the end of the eighteenth century. They first became common in Maryland, Delaware, and Virginia, and later were bred by Colonel Timothy Pickering in Massachusetts, where they were soon widely known.

“There is no doubt they were splendid animals, with many fine points, small bones, deep, round barrel, short legs, feeding easily, and maturing early, and often weighing

⁴⁵ *New York Farmer*, VI (1833), p. 290.

⁴⁶ Letter of Ephraim Perkins, I (1834-35), p. 84.

⁴⁷ *Massachusetts Agricultural Repository*, V (1818-19), p. 74.

⁴⁸ *Ibid.*, X (1828-1832), p. 312.

⁴⁹ *New York Farmer*, IX (1836), p. 108; *The Cultivator*, I (1834-35), p. 84.

at a year or a year and a half old, from four to seven hundred pounds, with light offal, and the first quality of flesh. They were mostly white—somewhat spotted.”⁵⁰

In New York there was developed early in the century a type known as the grass-fed hog. They were described as having

“short legs and noses, white sleek hair, small bones, and may be called a very comely, fat, indolent, good natured sort of swine—a race of animals in which the devil would never think of entering for any mischievous purposes. . . .

“In point of profit there can be no kind of comparison between the best of the grass breeds and the old lean sort of swine; while the latter usually cost more in raising and preparing for market than they are worth; the former afford a handsome profit to those who raise them, but more especially if the rearing of them be suitably combined with the business of the dairy.”⁵¹

At the age of 18 months or 2 years the grass breed would weigh (dressed) between 300 and 450 pounds.⁵²

Many other breeds were developed from imported animals in various localities—the Byfield and the Mackay breed in Massachusetts and the Chester County Whites in Pennsylvania. There was at least one epidemic of speculative fever in swine-breeding, connected with the importation of Berkshire hogs about 1830. Although excellent animals, they were too delicately organized for the rough and ready methods of treatment in this country, and farmers who had bought them at high prices lost heavily.⁵³ In general, however, the new breeds adapted themselves successfully to American conditions. By 1840 the old race of native swine had almost disappeared. A contributor to the *New England Farmer*⁵⁴ wrote:

“Formerly New England was over-run with a raw-boned lank-sided race of animals, which devoured the substance of the farmer, and like Phariol’s [sic] *lean kine*, ‘were still ill-favored and lean as before,’ and whose chief return to the owner, was skin, bone, and bristles. But we think we may now congratulate the Society on the almost entire extinction of this race, whose very existence was a waste, and whose disgusting and uncouth appearance was a mere nuisance. We now generally find a small boned, well proportioned breed of Swine, whose handsome appearance and good qualities, abundantly compensate for the exchange.”

The market demand did not lead to as marked geographical concentration in the case of swine as of cattle in the East. The increase in numbers which undoubtedly occurred was widespread, but was especially notable in dairying regions, such as the Berkshires, where they were fed on cheese whey and skim milk. It was estimated that there one hog was kept for every four cows.⁵⁵ Pork was produced as a by-product at distilleries, where swine were fed on the mash, and large numbers were fattened on the offal from slaughter-houses in the vicinity of the cities.

COMPETITION OF WESTERN SWINE AND PORK.

Western competition from western New York and Ohio in swine and salt pork was more seriously felt by Eastern farmers than in any other kind of

⁵⁰ Flint, in Kettell, *Eighty Years’ Progress*, I, 63.

⁵¹ *The Ploughboy*, II (1820–21), p. 234.

⁵² N. Y. Bd. Agric., *Memoirs*, II (1823), p. 77.

⁵³ Coburn, *Swine Husbandry*, 42.

⁵⁴ XI (1832–33), p. 126.

⁵⁵ *Second Report, Agriculture of Massachusetts* (1838), p. 74.

livestock. Worcester County, Massachusetts, which about 1830 was sending out 2,000,000 pounds of pork to Boston, in 1836 was buying western pork from Boston.⁵⁶ In 1840 the swine sold at Brighton came principally from New York State.⁵⁷ In the Mohawk Valley as early as 1828 farmers were complaining that they could no longer advantageously make pork for the Albany and New York markets. "The farmers to the West, where Indian corn is cheap, can now, assisted by the canal, afford to undersell us."⁵⁸

DRAFT ANIMALS.

In New York and Pennsylvania there seems to have been an increasing use of horses instead of oxen in farm work, especially after the introduction of hay-rakes, cultivators, and other horse-drawn tools. The New Englanders clung to their oxen, using them still in preference to horses for plowing and teaming. A single horse was kept by well-to-do farmers "to go to mill, and to church, and for the convenience of the family." Occasionally a horse was hitched ahead of a yoke of oxen to add strength to the team. In the East, little attention was given to improving the breed of horses, except those used for pleasure driving and riding. In the West, horses were much more used than in the Eastern States, many farmers keeping a half dozen or more.

"Much of the travelling throughout the western country, both by men and women, is performed on horseback; and a large proportion of the land carriage is by means of large wagons, with from four to six stout horses for a team. A great proportion of the ploughing is performed by horse labor. Horses are more subject to diseases in this country than in the old States, which is thought to be occasioned by bad management, rather than by the climate. A good farm horse can be purchased for fifty dollars. Riding or carriage horses, of a superior quality, cost about seventy-five or eighty dollars. Breeding mares are profitable stock for every farmer to keep, as their annual expense in keeping is but trifling: their labor is always needed, and their colts, when grown, find a ready market. Some farmers keep a stallion, and eight or ten brood mares."⁵⁹

⁵⁶ *New England Farmer*, XV (1836-37), p. 249.

⁵⁷ *4th Report, Agriculture of Massachusetts* (1841), p. 304.

⁵⁸ *New York Farmer*, I (1828), p. 268.

⁵⁹ Peck, *New Guide for Emigrants* (1836), p. 281.

CHAPTER XVIII.—CROPS AND TILLAGE.

The chief improvements in field culture during this period were better tillage by improved implements, the conservation of soil fertility by increased use of manures, and more constant use of tilled land by the elimination of summer fallows. There is little evidence of the development of systematic crop rotations. Farmers took little account of the effect of cropping systems on soil fertility; they chose the crops which they needed for farm consumption and for which there was a market, and the order in which they shifted a crop from one field to another was determined by tradition, convenience, or chance.

CROPPING SYSTEMS.

Grass and corn were standard crops for all eastern farms and, in most districts outside southern New England, wheat as well. Oats, rye, and barley were of minor importance. Potatoes and other roots were not largely grown as field crops and so had no definite place in rotations. The cropping system frequently followed in Lancaster County, Pennsylvania, about 1825, is probably typical of the better farming of the East.

“The land being rich, they crop hard, as will appear by the following rotation, which they frequently adopt: 1st, corn; 2d, barley or oats; 3d, wheat, with manure; 4th, rye; 5th, clover and timothy. When they are not likely to have manure for the barley or oat stubble, they omit the barley or oat crop, and break the corn ground for wheat before harvest. Then the rotation is corn, wheat, rye, and grass seed. On the above system, not more than one-fifth of grass land is broken annually, and as they keep few cattle, and these mostly soiled in the stable until after harvest, nearly four-fifths of the whole cleared part of the country is left in harvestable crops.”¹

In Chester County about this time the “prevailing and most approved mode of culture” was a six-year rotation. First, corn followed by spring grain, barley, or oats. When that crop was off, the field was manured and plowed the latter end of August. It remained thus about a month and was then cross-plowed and sown with wheat or rye, well-harrowed and rolled. Grass seed, timothy or orchard grass and clover, were sown on the grain, and after the grain was harvested the field was kept as upland meadow or pasture for 2 years, when it was again plowed and sown with corn.²

CONSERVATION OF SOIL FERTILITY.

Barnyard manure was available on every farm in quantities proportionate to the livestock kept. As farms in general became more heavily stocked, the manure produced increased and applications were more frequent. In general, fields were manured every 3 or 4 years. But the applications were scanty, and

¹ *American Farmer*, VII (1825), p. 163.

² *Ibid.*, X (1828), p. 65. For similar rotations used in New York and Massachusetts, see N. Y. Bd. Agric. *Memoirs*, II (1823), p. 19; *4th Report, Agriculture of Massachusetts* (1841), p. 240.

owing to bad management the manure lost much of its fertilizing qualities. Few farmers could afford the labor cost of carting manure, except after harvest in the fall or during the winter. Hence it lay for months in the barnyard unprotected from sun and rain, losing nitrates by fermentation and leaching.³

SOIL AMENDMENTS.

The use of plaster of Paris (gypsum, sulphate of lime) on wheat and grass lands had spread rapidly in the early decades of the nineteenth century. In the neighborhood of New York, on western Long Island, and in Dutchess and Westchester Counties the introduction of gypsum was said to mark "a new era in agriculture and rural economy."

"By this means, and consequent attention and improvements, the products of the 2d or 3d quality of land have been nearly doubled within the last 10 years; and land of this description has risen in value 20 to 30 and 40 per cent."⁴

About 1815 the supply of plaster, which up to that time had been received chiefly from Nova Scotia, was increased by the opening of new quarries in western New York and on the Hudson River. The price, which was normally about \$18 a ton, had risen to \$30 and \$40 during the War of 1812, but the new supplies sold for \$12 a ton.⁵ In western New York farmers made great use of the local supplies of gypsum, hauling it 30 and 40 miles, and in winter, when the sleighing was good, 70 and 80 miles from the quarries. Large amounts were also shipped down the Susquehanna for use in eastern Pennsylvania. By 1835 the price at the mills was as low as \$2 and \$3 a ton.⁶ Gypsum proved especially valuable on sandy and gravelly soils, but after a few years its benefits appeared to diminish.

The use of lime, which had been noted before the Revolution in the valley of the Susquehanna, became general after 1820. Limestone, which abounds in the neighborhood, was burned with anthracite coal and sold at local kilns at 10 cents a bushel. A contributor to *The Cultivator* wrote:⁷

"The improvement which has been effected within the last twenty years in several of the eastern counties of Pennsylvania, (and especially in Chester), is almost incredible. And the whole is mainly attributed to a regular and judicious use of lime as a manure Some idea may be formed of the estimation in which lime is held here as a manure, by the fact, that farmers come from 25 to 30 miles, i. e. from Maryland and the poor district of primitive formation in the southern part of Chester county, bordering on the Maryland line, to my lime-kiln and others in the neighborhood: the lime costing those farmers twenty-five cents per bushel when delivered. To the farmers in that quarter, lime is the 'anchor of hope'; there it has already made the barren and desert place glad, and is fast putting a new and improved face upon the country."

Another calcareous soil amendment which came into rather general use in a limited area was the New Jersey marl. The benefits of marl were known

³ *American Farmer*, VIII (1826), p. 122; X (1828), pp. 66, 114; 2d Report, *Agriculture of Massachusetts* (1838), p. 80; 4th Report (1841), p. 131.

⁴ Spafford, *New York Gazetteer* (1813), p. 18.

⁵ *Niles Register*, VIII (1815), p. 136.

⁶ *Ibid.*, VII (1814-15), p. 416; Phila. Agric. Soc. *Memoirs*, III (1814), p. 268; *The Cultivator*, II (1835-36), p. 184.

⁷ V (1838-39), p. 77. See also *Maine Farmer*, IV (1836), p. 364.

and application had been made in an experimental way as early as 1800, but not until about 1820 did its use become a factor in the farming of the State. The marl district extends across the State in a belt about 10 to 20 miles wide from Sandy Hook to the Delaware River below Red Bank. We read in *The Cultivator*:⁸

“This region of country is well calculated to be one of the most productive in the State; it abounds in marl, both the green sand and calcareous, or shell marl; the former is dug in many places within two feet of the surface, and the latter generally about six feet; the first is sold at the pit for 3¼ cents a load of 20 bushels, and the last at 50 cents per load. The application to the soil of both kinds is about the same in quantity, ranging from 5 to 25 loads per acre. The greatest distance to which they have hauled from this neighborhood is about 12 miles. The general use of marl here is quite recent, and no doubt as it becomes better known, the use of it will be greatly extended. . . .”

Fertilizers had for the most part a local use and a local market. Guano, the first imported fertilizer, was already known, and shipments had been received in Boston as early as 1830.⁹ But for the most part, farmers used what was available near home. Thus the market gardeners of Rhode Island used quantities of rockweed and fish, and from Boston and New York slaughter house offal, night soil, and stable manures were carted to neighboring towns for use on the fields. In New York about 1840 a firm was advertising, under the name poudrette, night soil in powdered form, disinfected and deodorized.¹⁰

GRASS LAND—HAY AND PASTURAGE.

All fields were regularly laid down to grass after two or three grain crops had been taken off and were then mowed or pastured for several years. In addition, there were permanent meadows, usually low land along the margins of rivers and smaller streams, the so-called “bottom lands” or “intervalles,” which were never plowed. In the management of grass land the market influences are clearly evident. The concentration of commercial beef-fattening and dairying in a few areas led to the improvement of upland mowing lands by regular sowing of clover and other grasses, and even permanent meadows were occasionally manured and plowed; but in the back country, where commercial grazing was not profitable, rough and stony mowing lands reverted to pasture, and pastures growing up with weeds and bushes soon became woodland.¹¹

In Chester County, Pennsylvania, the prosperity of graziers was reflected in increased attention to grass lands. Here, we are told, clover was sown as regularly as wheat.¹² About 1820, during a period of temporary failure in the clover crop, orchard grass was introduced. The sowing of lucerne (alfalfa) did not progress beyond the experimental stage. Oxen were fattened in this country in part on permanent meadows, “well set with natural grasses,” at the rate of from 30 to 50 animals to 100 acres.¹³ Cattle were also grazed on

⁸ III (1836-37), p. 179. See also Rogers, *Geology of New Jersey, 1st Report* (1836), p. 46. A map showing the marl region is given in Rogers's *2d Report* (1840).

⁹ *New England Farmer*, IX (1830-31), pp. 54, 129.

¹⁰ *The Cultivator*, VI (1838-39), p. 144.

¹¹ N. H. State Bd. Agric., *Agricultural Repository*, I (1822), p. 49; Massachusetts Board of Agric., *1st Annual Report* (1853), pt. I, p. 69; *New England Farmer*, XVII (1838-39), p. 114.

¹² *American Farmer*, X (1828), p. 65.

¹³ *Loc. cit.*

sown uplands, for the high cost of farm labor had stimulated farmers to give up grain crops and lay down many of their fields to grass. A contemporary observer described the management of such pastures in Chester and Delaware counties as follows: ¹⁴

“I observed, in many parts of Chester and Delaware counties, the farmers followed grazing either for beef or butter. They manure and lime their land highly, until it is sufficiently strong to produce a good crop of smooth stalkmeadow-grass, green grass (*Poa pratensis*), and white clover, with which the land is soon covered. As the red clover fails with which the land is laid down after mellowing crops, this sward of white clover and green grass they carefully preserve, without ploughing, for many years; and in order to prevent its running out or becoming hide-bound, as the graziers term it, they sometimes scarify the sod and manure on the surface in the winter. But if they are obliged to renew the grass by ploughing, they give the land a good coat of manure and plough it about four or five inches deep, and turn the sward very neatly; immediately sow it down with wheat, which never fails to produce a good crop; the native grass comes up through the seams, and is much more vigorous. But the graziers plough as little as possible, esteeming a good crop of grass more profitable than grain; when the cost of cultivating grain crops is counted; and when land is got into this state, it frequently rents for eight dollars per acre. By adopting a regular system of grazing, few hands are required; the land always looks handsomely, while it makes the owner and the land rich together. The grazier calculates that one acre of good rich native grass will make a thrifty steer fat in four or five months, which adds to his value one half,—say he costs twenty dollars, when fat is forth forty.”

In the Connecticut Valley much of the hay crop was cut on permanent meadows on the bottom lands or intervalles, where the annual overflowing of the rivers caused native grasses to yield large crops without ever plowing. The famous Deerfield Meadows, a tract of about 3,000 acres, were mowed two or three times a year, yielding about 3 tons to the acre.¹⁵ In the hill towns of this region, clover, timothy, and red top were sown at the rate of 3 pecks of the first, 1 of the second, and from 4 to 6 pounds of clover seed. The land was laid down with wheat, rye, or oats, and the grass seed sown with the grain. The first year, when the clover predominated, the average yield was from 2 to 3 tons, decreasing to little over a ton an acre after the second year.¹⁶

In Maine, farmers sowed clover about once in 8 years, but few sowed other grasses. Consequently, hay was a variable crop and farmers were at times forced to dispose of their stock at a sacrifice for lack of winter fodder.¹⁷

GROWTH OF MARKETS FOR HAY IN CITIES.

The consumption of hay by horses at livery and private stables in towns and cities gave farmers in their vicinity a rapidly increasing market. A single farmer in 1837 was sending between 300 and 400 tons of pressed hay to the New York market.¹⁸ From Essex County, Massachusetts, in the same year, 1,035 tons of hay (including some straw) were sold to Boston,¹⁹ and in addition about a thousand stage and livery horses in the county were supplied.

¹⁴ *American Farmer*, VII (1825), p. 163.

¹⁵ *4th Report, Agriculture of Massachusetts* (1841), pp. 4, 7.

¹⁶ *Ibid.*, 5, 6.

¹⁷ Putnam, *Touches on Agriculture*, ch. II, p. 24.

¹⁸ *The Cultivator*, IV (1837-38), p. 12.

¹⁹ *1st Report, Agriculture of Massachusetts* (1837), p. 17.

The hay from Ipswich had a high reputation and great pains were taken in curing it. Many farmers in Middlesex County were increasing their hay crop in the years 1830 to 1840. Hay was selling in Essex at this time at from \$12 to \$28 per ton; a fair average price was \$16. Middlesex farmers received about \$15 and figured \$2.50 as the cost of harvesting plus \$2.50 for marketing. Assuming an average yield of 1½ tons, the farmer would net \$15 per acre for the crop.²⁰

WHEAT—IN NEW ENGLAND.

Of all the crops grown in the north, wheat was most susceptible to changing economic conditions. Its high specific value and its good keeping qualities made transportation possible even under primitive conditions, and in the commercial towns there was a constant market for wheat flour. Consequently, we found that in colonial days wheat was a commercial product and that the areas of wheat-growing were shifting so as to concentrate production on the best land. In New England, the Connecticut Valley²¹ was noted for its wheat before 1700 and supplied other sections with wheat and flour. But early in the eighteenth century the port towns of New England were getting breadstuffs, principally wheat, from the Middle and Southern colonies, and the wheat areas of New England had shifted to newer soils in northern Vermont and the Berkshires. Elsewhere in New England wheat was generally regarded as a failure. Many causes were assigned, the climate, the rust, etc., but the plain truth was revealed to only a few. Among these was John Adams, who wrote:²²

“Notwithstanding all this [i. e. failure of Siberian wheat], I have no doubt that wheat may be raised in Massachusetts as well as anywhere else, but the land must be under proper cultivation, particularly manured abundantly—the seed sowed so early that it may be forward and vigorous enough to bear the winter, and start early enough in the spring to shoot the grain and ear forward before the season of insects. But this process which I know has succeeded and will succeed, is expensive, and the wheat will not procure a price equal to the labor. What is the reason of this? Here lies the mystery. No Russian seed will retrieve this. . . .

“You will never get Siberian wheat or any other wheat to grow in New-England in quantities to constitute a steady staple, without an expensive cultivation, and that expense will never be repaid while wheat, rye, and corn have such a formidable rival in commerce.”

At this time it was estimated that 90,000 persons in Massachusetts subsisted on imported flour, requiring, at the rate of a pound a day, between 13,000 and 14,000 barrels a month.²³

Between 1800 and 1820 wheat-growing developed on new soils in Maine and was still produced for market in western Vermont. Whipple²⁴ wrote of Maine in 1816:

“In favorable seasons wheat is more profitably cultivated than corn.—Twenty years since, very few people supposed that wheat would ever be cultivated to advantage in

²⁰ 4th Report, *Agriculture of Massachusetts* (1841), p. 237.

²¹ See p. 43.

²² Letter of August 11, 1812, to Elkanah Watson, in Watson, *Men and Times of the Revolution*, 379.

²³ Letter of Thomas Jefferson to Levi Lincoln, August 22, 1808, in *Works* (Library ed., 1904), XII, 145.

²⁴ *Geographical and Statistical View*, 15.

Maine—since that time, it has been ascertained that the soil between the Penobscot and Kennebec rivers, is peculiarly adapted to this article; and is found to be more profitable than any other grain.”

Vermont wheat in 1820 was marketed at Troy on the Hudson River.²⁵

EFFECTS OF WESTERN COMPETITION.

By 1830 the influence of cheap transportation *via* the Erie Canal was apparent, and by 1840 flour of western wheat was being used everywhere in New England by farmers as well as city folk. Flour prices had suffered a marked decline since the opening of the century. In the years of active foreign demand, prices had been high, averaging \$9.44 per barrel in 1800 to 1807 and \$10.07 in 1808 to 1814. The decline in export trade brought the average for the succeeding 11 years (1815 to 1825) down to \$7.82. The effects

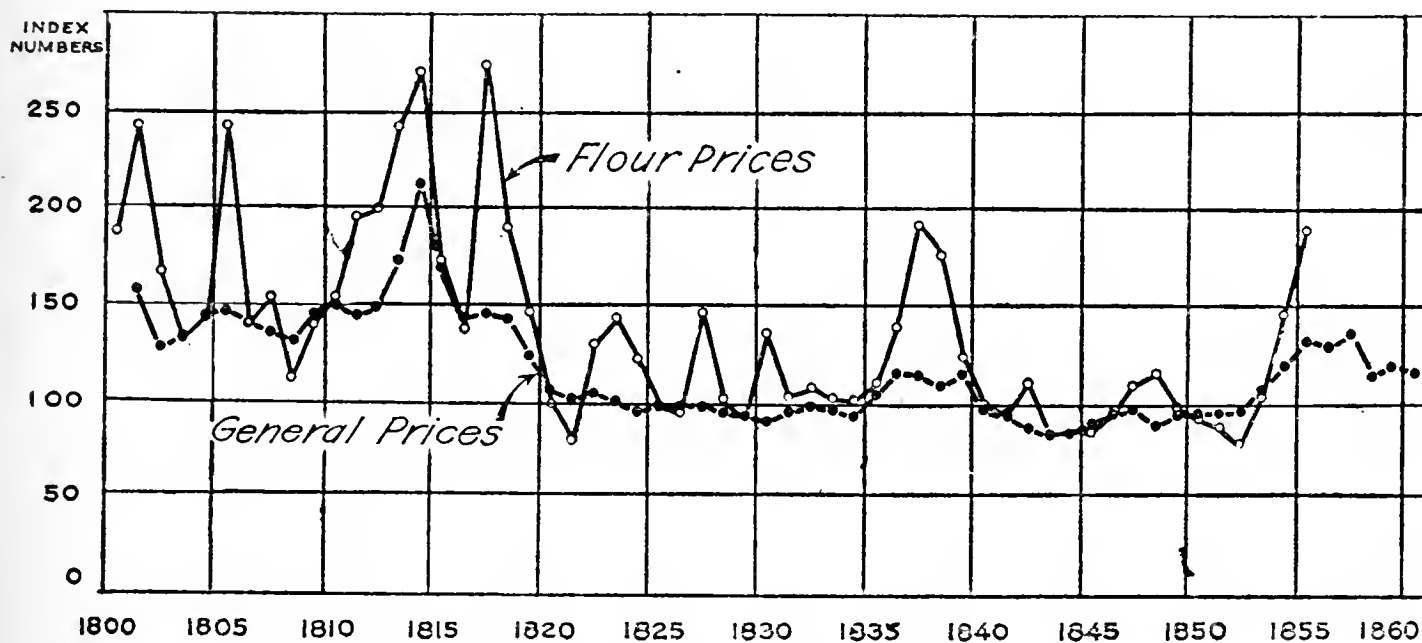


FIG. 31.—New York flour prices and general prices, 1800–1860.

of the opening of the Erie Canal are seen in a drop of the average price for the next period of 11 years (1825 to 1835) to \$5.90. In 1836 and 1837 poor harvests forced up the price temporarily, raising the average for the 5 years 1835–1839 to \$8.²⁶ A comparison of the trend of flour prices and general prices is shown in figure 31.

A historian of Berkshire County²⁷ recorded in 1829:

“The cultivation of wheat and rye has been gradually diminishing for years, and has been considerably reduced since the opening of the Western Canal. Of rye, a sufficient quantity is raised *for the use of the inhabitants in the middle and western part of the County*, but not enough to supply the eastern and higher part, where the grains are not easily cultivated.

“Of wheat, considerable quantities were formerly carried to the market towns along the Hudson River, as Hudson, Kinderhook, Albany, and Troy; but for several years much more wheat flour has been introduced into the County than has been carried out of it.”

²⁵ Mass. Hist. Soc. *Collections*, 2d Series, IX, 138.

²⁶ Average annual export prices at New York, from Klippart, *The Wheat Plant*, 328.

The prices by years will be found in table 72, p. 499.

²⁷ Field, *Berkshire County, Massachusetts*, 87.

In Vermont it was stated that in a single town (Windsor) \$9,500 was paid every year for western flour.

"A few years ago Vermont raised a surplus of wheat, for which she found a ready market. It is now the reverse; and intelligent men think the amount paid by our farmers for the article of flour the last year, exceeds what they have received for their wool, by many thousand of dollars."²⁸

In Maine, in 1837, farmers 100 miles inland were eating bread made of Rochester flour.²⁹ A legislative committee which investigated wheat production and consumption in Massachusetts reported that in 1830 only 16,073 bushels were produced in the entire State and that the imports of flour into the port of Boston for consumption in Massachusetts and in northern New England in the years 1830 to 1837 averaged 389,000 barrels. In addition, flour was regularly brought into other smaller ports and there was

"an almost perpetual transportation by means of wagons, from Troy, Albany, and Hudson, into the county of Berkshire, for the supply not only of the inhabitants of that county, but for consumption by the people of many towns in the counties of Franklin, Hampshire, and Hampden."³⁰

Notwithstanding the facts which were thus revealed and the well-known disinclination of farmers to raise wheat, the legislatures of Massachusetts and Maine attempted to stem the tide of western flour by paying bounties to native wheat-growers. The failure of the experiment should have been evident from the beginning. Wheat production was slightly increased as long as the bounty was paid, but no permanent gains were secured.³¹

ENEMIES OF THE WHEAT CROP.

A part of the discouragement of Eastern farmers in respect to wheat-raising was owing to the ravages of crop enemies. The rust³² was prevalent throughout the section, and the Hessian fly, which had first appeared during the Revolutionary War, had spread rapidly. In Bucks County, Pennsylvania, in 1823, so much of the wheat was destroyed that farmers were considering the abandonment of the crop. Wrote a farmer of that county to the Pennsylvania Agricultural Society:³³

"It must be conceded that in many districts, its cultivation has for some time, been an unprofitable part of husbandry; and the present season has shown, that a failure has taken place to an alarming extent, throughout a great portion of our wheat country. It appears that in some places, where the fly had been scarcely known, the crops are now nearly destroyed: and from almost every quarter, we have accounts of the most distressing kind."

A new enemy, the grain worm or midge,³⁴ crossed the border from Lower Canada between 1825 and 1830 to northern New York and Vermont. It was described as a fly with orange-colored body and white wings, which deposited its eggs in the ears of the wheat. When the young were hatched they fed on

²⁸ *Windsor, Vermont, Republican*, quoted in *New York Farmer*, VII (1834), p. 91.

²⁹ *Maine Farmer*, V (1837), p. 44.

³⁰ *Mass. House of Representatives, Documents* (1838), No. 12, p. 6.

³¹ See p. 193.

³² Described on p. 93.

³³ *Memoirs*, I (1824), p. 165.

³⁴ *Cecidomyia tritici*.

the grain. Progressing at the rate of from 40 to 60 miles a year, it had by 1840 spread over all of New England and large parts of New York State, being found as far east as Maine, as far south as Dutchess County (New York), and as far west as the Genesee Valley.³⁵

Jesse Buel wrote: ³⁶

“It is believed [that the grain worm] has diminished the product of the wheat crop, in the districts which it has ravaged for two or three years, at least THREE-FOURTHS—that is to say, it has prevented the sowing of the winter varieties to a very great extent, and it has destroyed, at a fair computation, one-half of the crop which has been sown. Most of the wheat now grown in these districts is of the spring varieties, and these, unless sown late, fare very little better than the winter kinds.”

INTRODUCTION OF NEW VARIETIES.

It had been discovered that late-sown winter wheat escaped damage by the Hessian fly, but on the other hand, late maturity made the crop peculiarly liable to attacks of the rust and the grain worm. As the result of the endeavor to find a variety which could be sown late and yet would mature early, the so-called Mediterranean wheat was introduced. It was a bearded red winter wheat brought in 1819 from islands in the Mediterranean Sea.³⁷

Spring wheat was coming into more general use in place of winter wheat in northern New England and New York, where the crop if sown in the fall was apt to suffer severe losses from winter killing. Although not attacked by the Hessian fly, spring wheat suffered from both rust and the grain worm. In milling flour for export, spring wheat was not highly regarded, although it was mixed sometimes with winter grain.

“One bushel of this kind of wheat is generally sufficient to impart a dark shade to the flour made from five bushels of the best grain. It is only proper for flour of second quality, and fine and common middlings—and it would be well if our wheat dealers would keep such wheat separate from good winter grain, and send it to market to be sold by its proper title. This wheat does not possess the oleaginous properties in equal portion with winter grain.”³⁸

New varieties of spring wheat introduced before 1840 were the Siberian (bearded), Egyptian or many-spiked, the Black Sea, and the Italian.³⁹ Of these, the Black Sea variety, on account of its high yields and early maturity, was perhaps the most valuable.

WHEAT YIELDS.

The average yield of wheat in New England in 1840 was estimated by Colman at not over 12 bushels per acre.⁴⁰ The statistics presented in connection with claims for the State bounty in 1838⁴¹ showed the average yields in the most productive areas in Massachusetts to be about 15 bushels per acre. In

³⁵ *The Cultivator*, V (1838-39), p. 27; N. Y. Agric. Soc. *Transactions*, III (1843), p. 146.

³⁶ *The Cultivator*, IV (1837-38), 2d ed., p. 189.

³⁷ Hunt, *Cereals in America*, 63; Klippart, *Wheat Plant*, 87, gives a different story of its origin.

³⁸ N. Y. Soc. for Promotion of Useful Arts, *Transactions*, IV (1819), pt. II, p. 39.

³⁹ *The Cultivator*, IV (1837-38), pp. 110, 174; *Mass. Senate, Document No. 77* (1838); N. Y. Agric. Soc. *Transactions*, I (1841), p. 360.

⁴⁰ *Agricultural Addresses*, 27.

⁴¹ *3d Report, Agriculture of Massachusetts* (1840), pp. 48, 51.

Lancaster County, which had the reputation of having the best wheat crop in Pennsylvania, an estimate of 1820 put the average at 15 bushels, although many farmers got from 20 to 30 and some 30 to 40 bushels.⁴² In Chester County, Pennsylvania, the average wheat crop was from 12 to 15 bushels.⁴³ In the interior of New York, according to the *New York Farmer*,⁴⁴ 20 to 25 bushels was an average wheat crop.

CORN.

Corn, like hay, continued a general crop without marked regional concentration. Unlike wheat, corn was not attacked by destructive crop enemies, and although some localities were better adapted than others for its cultivation, yet the differences were not so marked as to lead to the abandonment of the crop anywhere. However, in New England, corn production did not keep pace with increased consumption, and the deficit was supplied by importation, principally from the Southern States. Pitkin⁴⁵ (1835) estimated the amount of Indian corn consumed in New England which was brought from other parts of the Union at between 2,000,000 and 3,000,000 bushels a year. Corn from western New York and from the Ohio Valley did not figure in eastern markets in its original form, having too little value to stand transportation costs. Western corn nevertheless competed with the eastern product when condensed into pork, and in this form the competition was serious.⁴⁶

The chief change in tillage methods was the use of the cultivator instead of hand hoeing, to which reference has already been made. Many farmers still "topped" their corn for fodder and removed the blades, also, before the ears were ripe, thus considerably decreasing the yield. The southern and western practice of feeding from the stack in the field was advocated, but I have found no evidence of its adoption in the East.

Progress was made in the development of new varieties of corn through seed selection, chiefly for the purpose of obtaining early maturity and consequent immunity from frost in the high country and in northern New England. The Dutton corn, a variety combining large yield with early maturity, was well known in Vermont. A list and description of 40 recognized varieties was published by Jesse Buel in 1838.⁴⁷

MINOR GRAINS.

Of the minor grains, rye and barley seem to have been most important. Rye bread was still eaten by farmers remote from markets. A tolerable crop of rye could be raised by even a negligent farmer on poor land and the distilleries furnished a ready market. In four towns near Springfield, Massachusetts, in the Connecticut Valley, according to an estimate of 1826, more than 100,000 bushels of rye, besides large quantities of corn, were annually dis-

⁴² *American Farmer*, II (1820-21), p. 137.

⁴³ *Ibid.*, X (1828), p. 65.

⁴⁴ VI (1833), p. 341.

⁴⁵ *Commerce of United States*, p. 525. See also *New England Farmer*, XV (1836-37), p. 57; Colman, *Agricultural Addresses*, 37.

⁴⁶ See p. 230.

⁴⁷ *The Cultivator*, V (1838-39), p. 43.

tilled,⁴⁸ and approximately the same amounts were used in the distilleries near New York City.⁴⁹ Barley was used to some extent for feeding stock, especially horses, and when wheat was scarce barley flour was used for bread, but when raised for sale the principal markets were the breweries. Chester County, Pennsylvania, and Rhode Island were noted for barley production before 1820,⁵⁰ but the chief area of production was in the neighborhood of Herkimer County, in New York State. The *New York Farmer*⁵¹ boasted:

“Two-thirds of all the barley grown in the United States is believed to be marketed at Albany and the neighboring towns upon the Hudson. The amount brought to our market last year is estimated at 450,000 bushels. It is of two kinds—two rowed and six rowed, one possessing a thin and the other a thick skin, and larger berry, ill adapted to be malted together, as one kind malts quicker than the other, and becomes sensibly deteriorated before the saccharine matter of the other kind is fully developed. The two varieties are often mixed by the grower; but that which passes through second hands, as the merchant, boatmen, &c. is almost universally so, and is besides frequently adulterated with oats and other foreign matters, which seriously depreciate its value. It is stated that the deterioration and loss consequent upon the bad condition of the barley brought to market the last season, was equal to ten per cent. or 45,000 bushels—which, expressed in money, at 75 cents the bushel, amounts to \$33,750.”

Oats were often sown when laying land down to grass. They were used as fodder for fattening cattle when mixed with peas. The demand from livery stables stimulated cultivation in the neighborhood of cities. Only in a few sections were oats used for human consumption.⁵² Buckwheat was not highly regarded. It had the reputation of being a poor grain, to be cultivated by the indolent and slovenly. Its value in driving out weeds was recognized, however, and progressive farmers occasionally turned it under as a green manure.⁵³

POTATOES AND OTHER ROOT CROPS.

The benefits of raising root crops, potatoes, turnips, carrots, mangel-wurtzel, and ruta бага, for fodder were strongly emphasized by agricultural societies and by farm papers, but their exhortations fell for the most part on deaf ears. Potatoes were more generally cultivated after 1820, better seed was used and larger crops were harvested, but except in a few localities they were not fed to stock. In eastern Massachusetts and Rhode Island, and in Maine, potatoes were raised in considerable quantities for market. Maine potatoes in 1840 had already achieved a high reputation and were being sold in the Southern States.⁵⁴ The more general cultivation of roots for fodder was prevented by high labor costs, particularly at harvesting. A contributor to the *Memoirs*⁵⁵ of the New York Board of Agriculture from Onondaga County discussed the objections to raising turnips on a typical 150-acre farm, whose labor force comprised only two men:

“Suppose, then, that the turnip husbandry were introduced, and that from six to ten acres of turnips were annually cultivated on every man’s farm; where could sufficient

⁴⁸ *Hampshire Gazette*, quoted in *New England Farmer*, V (1826-27), p. 159.

⁴⁹ *Genesee Farmer*, quoted in *Maine Farmer*, V (1837), p. 67.

⁵⁰ Phila. Agric. Soc. *Memoirs*, IV (1818), p. xxxii.

⁵¹ VII (1834), p. 144.

⁵² *2d Report, Agriculture of Massachusetts* (1838), p. 27; *4th Report* (1841), pp. 23, 213.

The Cultivator, IV (1837-38), 174.

⁵³ *American Farmer*, X (1828), p. 114.

⁵⁴ *The Cultivator*, V (1838-39), p. 187; *Maine Farmer*, V (1837), p. 44.

⁵⁵ III (1826), p. 92.

help be obtained for harvesting and securing these crops? The turnip harvest comes at a season of the year which, in this county, is generally very unpleasant—the days short, and much of the weather stormy. Frequently, the farmers here find it more than enough to harvest their corn, make their cider, and attend to their numerous other concerns, which are indispensable. If, in addition to their present stock of autumnal business, they had large crops of turnips to pull and secure, scenes of distress would necessarily ensue.”

In addition, he pointed out that turnips were a precarious crop, exposed to damage by the fly, grasshoppers, and by drought. The labor cost of feeding, too, was greater than the cost of feeding hay. Experiments with the new roots, mangel-wurtzel and ruta бага, had begun early in the century, but until about 1830 their cultivation was still limited to gentlemen farmers. Within a few years of the close of our period a more general interest in these crops was developing.⁵⁶

MARKET GARDENING.

Specialized areas of market gardening and fruit growing had developed rapidly between 1820 and 1840 in eastern Massachusetts, particularly Essex and Middlesex Counties, in Rhode Island in towns along Narragansett Bay, and in the neighborhood of New York on Long Island and in New Jersey. In these districts was found the most intensive farming in the whole country. Hired labor was regularly used; manures were liberally applied, both those made on the farm and stable manure brought from the cities. Land was reclaimed, meadows drained, and dry lands irrigated, and tillage was more like garden culture than field culture.⁵⁷ The efforts of farmers in these sections were not limited to supplying local markets; for some vegetables, notably onions and beets, markets were found in the West Indies and in the Southern States.⁵⁸

The profits of market gardening led to high land values in these sections, and as a result less intensive types of agriculture were displaced and forced back onto cheaper land. In 1836 the better class of farms in Dutchess County, near New York, were selling for \$100 per acre, four times their price in 1800; a few years later land just outside of Philadelphia brought \$150 per acre.⁵⁹ In West Cambridge, Massachusetts, land devoted to garden truck for the Boston market increased in value in the 10 years 1830 to 1840 from \$37 to \$300 per acre.⁶⁰ High land values in connection with ready markets produced tenancy near the large cities, a condition of land tenure almost unknown elsewhere in the North. Many of the truck farms were leased by immigrants, who had learned gardening in Europe. After a few years they were usually able to purchase their farms.⁶¹

⁵⁶ *The Cultivator*, IV (1837-38), p. 79; *Maine Farmer*, V (1837), p. 275.

⁵⁷ Descriptions of successful farming in Middlesex County, Massachusetts, with details of crops and sales are given in *4th Report, Agriculture of Massachusetts* (1841), pp. 400 et seq. For market gardening in Rhode Island, see Jackson, *Geological and Agricultural Survey* (1839), pp. 138, 148, 153, 155, 167, 181.

⁵⁸ *New England Farmer*, XV (1836-37), p. 44; *1st Report, Agriculture of Massachusetts*, (1838), p. 35; *4th Report* (1841), p. 222.

⁵⁹ *The Cultivator*, III (1836-37), p. 41. *New York Farmer*, VI (1833), p. 370.

⁶⁰ *4th Report, Agriculture of Massachusetts* (1841), p. 354.

⁶¹ *New York Farmer*, I (1828), p. 231.

ORCHARDS AND VINEYARDS.

Apples remained the most important orchard fruit everywhere, except in some districts in the Middle Atlantic States, as in New Jersey, where peaches were raised on a considerable scale. The production of cider had long been the chief means of utilizing apples, and but little attention was paid to the development of varieties, or to the pruning and care of orchards. The trees were described as "bristled all over, from root to top, with branches like whip sticks; hide bound, cankered and covered with moss."⁶² About the year 1830 a vigorous temperance reform swept over the Northern States, causing a marked decline in cider drinking. Many farmers cut down their apple trees and all neglected them. But in a few years new uses for apples were discovered. They were found valuable to feed to hogs, horses, and cattle, and the growth of urban population created a demand for better apples for table use and for cooking. On farms near enough to send apples to market, therefore, there was a renewed interest in apple growing, and new varieties were planted and engrafted.⁶³

The beginnings of commercial grape culture are found between the years 1780 and 1820, when vineyards were planted near New York and Philadelphia, in York County, Pennsylvania, at Cincinnati, Ohio, Lexington and Glasgow, Kentucky, and Vevay, Indiana, where 30 Swiss families had settled in 1804 on land particularly granted for the encouragement of vine cultivation. For the most part the vineyards were small, from 1 to 5 acres, and were invariably planted with foreign grapes, which proved unsuited to American conditions. The vines were either destroyed by various crop enemies or else did not flourish, even with the greatest care. About 1820 experiments began with native varieties, resulting in the development of the now famous Catawba grapes. A large emigration into the valley of the Ohio of Germans from the Rhine, beginning about 1820, brought many practiced vine dressers and assisted in the establishment there of commercial wine production.⁶⁴

SPECIAL CROPS—HOPS.

The pressure of western competition on staples such as wheat and pork caused eastern farmers, particularly in New England, to give attention to a number of special crops in an attempt to find commodities which could be profitably marketed under the new competitive conditions. Except in the case of tobacco, all of the special crops proved in the end to be more cheaply raised in the West and their production in the East had begun to decline by 1840 or 1850. The growing of hops for market had become localized in 10 or 12 towns in the northwest corner of Middlesex County, Massachusetts, as early as 1780, and by 1811 their annual production was over 100,000 pounds.⁶⁵ A considerable part of the crop was exported to France and Germany, and in

⁶² *American Farmer*, II (1820-21), p. 170.

⁶³ N. Y. Bd. Agric., *Memoirs*, II (1823), p. 75, 4th Report, *Agriculture of Massachusetts* (1841), p. 384; Conn. State Agric. Soc. *Transactions*, 1855, p. 186.

⁶⁴ *American Farmer*, V (1823), p. 251; VIII (1826), pp. 164, 284; *New York Farmer*, II (1829), pp. 94, 114; III (1830), pp. 212, 221; VII (1834), p. 131; *Ohio State Board Agriculture, 14th Annual Report* (1859), p. 465; Flint, *Mississippi Valley*, II, 149.

⁶⁵ *Valuation Returns of 1811*, MS. in Massachusetts Archives.

order to improve marketing conditions the Massachusetts legislature in 1806 provided for compulsory inspection and grading of all hops packed for export.⁶⁶ A high standard of inspection was established and conscientiously enforced, with the result that Massachusetts "first sort" brand became noted as the best in the United States.

"By adopting a high standard of inspection, the growers were soon brought to improve their hops, in order to bring them up to the 'first sort,' and the facts and character of such an official inspection becoming immediately known in Europe, those who sent orders from there required hops of Massachusetts inspection, and they in consequence commanded a cent or two on a pound more than those of any other state."⁶⁷

The average quantities inspected annually under this law were as follows:⁶⁸ 1806 to 1815, 304,377 pounds; 1816 to 1825, 599,765 pounds; 1826 to 1835, 595,451 pounds.

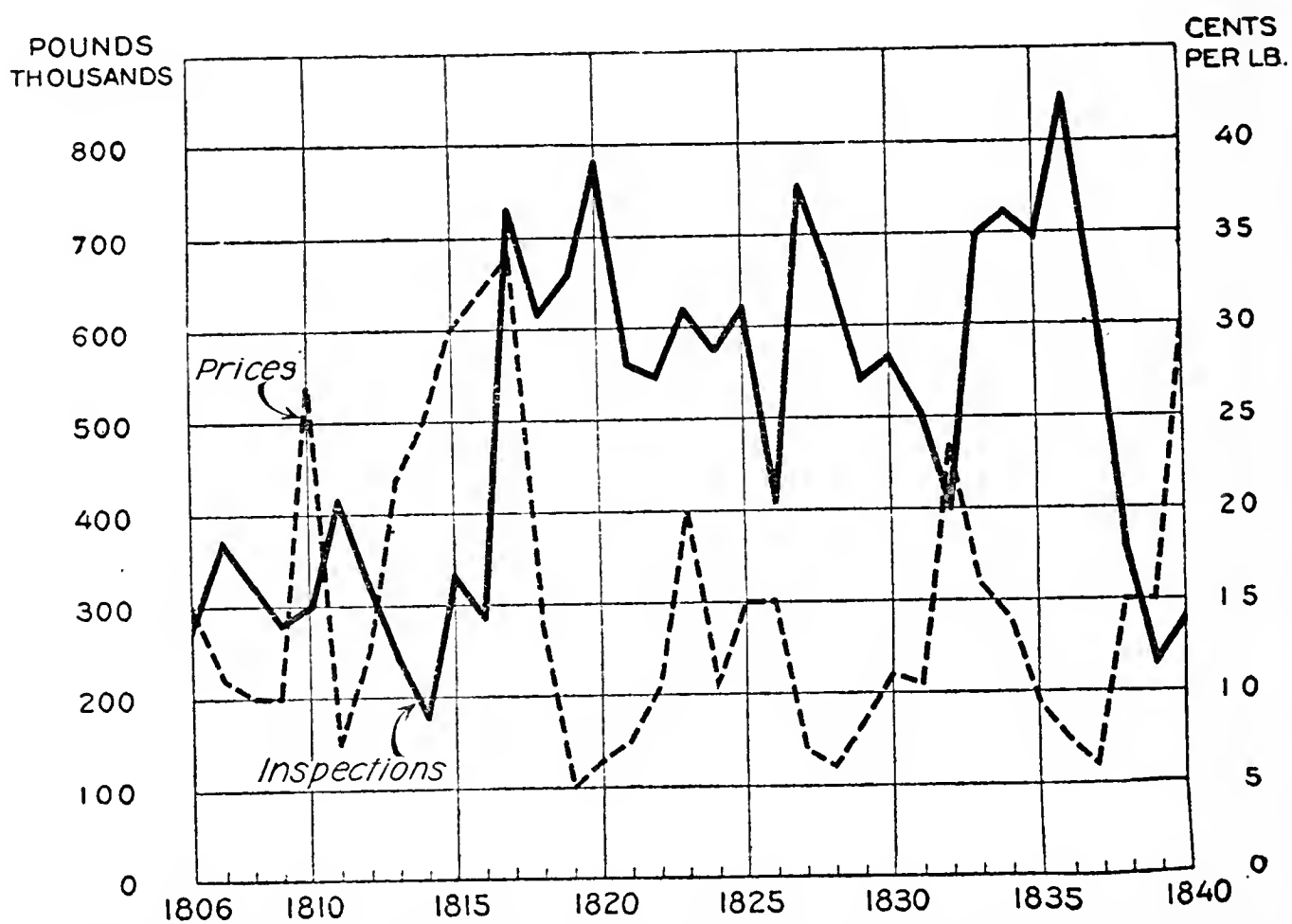


FIG. 32.—Hops: quantity inspected and prices in Massachusetts, 1806-1840.

In 1836 the high point of the industry in Massachusetts seems to have been reached. In that year about 850,000 pounds were inspected. Before 1840 a marked decline had set in. As in the case of wool, the collapse of prices following the crisis of 1837 seems to have brought western competition, already potentially strong, sharply into the foreground. Farmers in central New York, principally in Madison, Otsego and Oneida Counties, had begun about

⁶⁶ *General Laws of Massachusetts* (1823), II, 156. A similar law was enacted in New York in 1819. See *Revised Statutes of New York* (1829), I, 565.

⁶⁷ Flint, in Kettell, *Eighty Years' Progress*, I, 89. This was not, however, as Flint claims, "the first movement of the kind in the country." Inspection of a number of exported products, notably beef, pork, and flour, had been provided by colonial legislatures beginning in the early eighteenth century. See *Rhode Island Records*, III, 527; *New Jersey Archives*, 1st series, XVI, 346; Cary and Bioren, *Laws of Pennsylvania*, I, 261.

⁶⁸ *4th Report, Agriculture of Mass.* (1841), pp. 490-91. More detailed figures are given on p. 498, table 74.

1825 to grow hops for domestic and export markets. In that year inspections of hops produced in these counties amounted to 450,500 pounds.⁶⁹

The method of cultivating and harvesting hops as practiced in New England in the early decades of the nineteenth century has been described as follows: ⁷⁰

“The hop vine was trained, or trained itself, perhaps, on poles, which in the culture were from two to four inches in diameter at the base and fourteen and fifteen feet in length. The hills in the field were set at a distance of perhaps five feet apart, and averaged about one thousand to an acre.

“The picking commenced usually in the last week of August, and continued often until far into the first half of September. The vines were cut and the poles taken out of the ground by men and laid upon long bins sufficient to receive the entire length of the vine, which was usually not less than twelve feet. The picking was done by young people, boys and girls, who stood on each side of the bin.

“The product from one acre was about 1,000 pounds, or a pound to a hill, of dry hops. The drying was carried on in a building erected for the purpose, the hops being laid over lattice-work on the floor; and a fire of charcoal underneath furnished the heat for drying. This process was a delicate one, as it was necessary to extract all the moisture from the hops and to avoid scorching, as that injured the value in the market.”

Violent price fluctuations made hop-growing a speculative enterprise, and in order to eliminate this risk farmers were in the habit of making contracts extending over several seasons with buyers who guaranteed to take the product of a certain number of acres at a fixed price.⁷¹

BROOM CORN AND TEASELS.

Three special crops were profitably grown on the fertile soils of the Connecticut Valley in this period—broom corn, fullers' teasels, and tobacco. Of these, the first two enjoyed their maximum prosperity in 1830 to 1840, then succumbing to western competition. The growing of broom corn dated from about the year 1800. In 1825 it had become a staple in the river towns; in the town of Hadley alone 1,000 acres were annually planted. Said a writer in the *Boston Gazette*: ⁷²

“It is presumed there is not a town of equal extent in the United States, in which so much land is employed in the cultivation of this article. In a tour through the state of New York to Cayahoga river in Ohio, a few years since, we did not notice so much as half an acre of it in the whole distance. We understand, however, that its culture is pretty extensive in some parts of New Jersey. The mode of culture, in the towns on Connecticut river, is very similar to that of Indian corn, but it is said to require two or three times as much labour. The produce of an acre varies from 300 to 700 lbs. of that part of the plant which is made into brooms, (a few inches of the stalk, and the panicle divested of seed), and from 25 to 70 bushels of seed. Different opinions are entertained as to the value of the seed. Many assert that it is superior to oats, others estimate it much lower. It is probably worth 25 cents per bushel for hogs and cattle, but is of less value for horses. We are informed that the crops of broom corn in Hadley, Hatfield, &c. in favourable seasons, are worth from 25 to 50 dollars per acre, standing in the field. A considerable portion of the United States and Canada is furnished with brooms by the towns on Connecticut river, and we learn that large quantities are exported to South America.”

The brush was at first made into brooms by the raisers, as a by-industry of farming. Before 1840 the processes of manufacturing brooms had been trans-

⁶⁹ *N. Y. Assembly Journal*, 49th Session (1826), p. 650.

⁷⁰ Letter of George S. Boutwell, in *Groton Hist. Series*, IV, No. 5, p. 374.

⁷¹ *Maine Farmer*, II (1834), p. 45.

⁷² Quoted in *American Farmer*, VII (1825), p. 300.

ferred from the farms to factories. Prices were unsteady and the business, like hop raising, was speculative. In 1825 the crops standing in the field were valued at \$25 to \$50 per acre; ⁷³ in 1835 many farmers sold at the rate of from \$70 to \$100 per acre.⁷⁴

“About 1850 the farmers upon the western prairies began the raising of broom corn exclusively for the brush. It was of larger growth, long and straight, cut while green, and kilndried, and was much better than the brush raised in this valley, and soon occupied the market. The brooms made from the western brush were of handsome color, the brush having been cut before ripening; they were a stronger and a better broom in every way, the outside being covered with the hurls of the brush and no broom made from native brush could compete with them.”⁷⁵

Teasels, used by woolen manufacturers to raise the nap on cloth, were also grown in the Connecticut Valley. In 1835 the total American crop was estimated at 42,000,000 heads, of which 30,000,000 were grown in New England. The consumption exceeded the domestic supply and the deficit was made up by imports from France and England. Teasels were an uncertain crop, carrying from an average yield of 40,000 heads per acre to three or four times that number.⁷⁶

TOBACCO.

Early in the century tobacco was a cash crop in the Connecticut Valley. It was bought from the farmers by peddlers and marketed in the hill towns and was exported to the West Indies. The average crop was perhaps 10 tons. Between 1800 and 1820 production was stimulated by the establishment of local shops which began manufacturing plug and twist tobacco and later cigars, employing farmers' wives and daughters. About 1825, shipments of tobacco leaf were being made to New York, where the Connecticut Valley product had already attained a high reputation. A few years later the broad-leaf plant was first introduced from Maryland. The state of the industry in 1836 was described by Henry Colman as follows: ⁷⁷

“In passing through East Windsor, in Connecticut, in December last, I was surprised at the size of many of the buildings erected and used for the purpose of drying tobacco; and at the extent to which I was informed their cultivation of this plant was carried. I was told that one hundred acres cultivated with tobacco the current year in that place, averaged a produce of 2,400 lbs. to the acre; and that fourteen acres out of the hundred yielded 2,800 lbs. to the acre. The price at which it sells this year, is from eight to ten cents per pound. The cultivation is understood to be half more expensive than Indian corn; and the sale is always prompt. Peculiar advantages are enjoyed in this place from the immediate vicinity of very large gin distilleries, with extensive ‘piggeries’ annexed. The hogs are fed upon the refuse grains, and great quantities of the most valuable manure are in this way furnished. . . . The average crop is about 1,500 lbs.; 2,000 lbs. are not uncommon to an acre; and it sells from five to seven dollars per 100 lbs. This account was given me by a respectable farmer of Long Meadow, Massachusetts, five years ago, who cultivated the plant to some considerable extent. The price has since that time advanced, and the cultivation of it has been extended.”

⁷³ *New England Farmer*, IV (1825-26), p. 131.

⁷⁴ Jones, *The Broom Corn Industry*, in Pocumtuck Valley Memorial Association, *History and Proceedings*, IV, 108.

⁷⁵ *Ibid.*, IV, p. 110.

⁷⁶ *New York Farmer*, VI (1833), p. 271; IX (1836), p. 6.

⁷⁷ *Ibid.*, IX (1836), p. 33. See also Conn. State Agric. Soc., *Transactions*, 1856, pp. 432 et seq.; *New England Farmer*, XIV (1835-36), p. 171; Temple, *Whately, Massachusetts*, p. 176.

CHAPTER XIX.—THE TRANSITION FROM SELF-SUFFICIENT ECONOMY TO COMMERCIAL AGRICULTURE, ITS DIFFICULTIES—ITS SIGNIFICANCE.

The transition from self-sufficient economy to commercial agriculture was not easily accomplished. The powerful forces of habit and tradition tended to keep the farmers in the old ways of producing what they needed for their own use, selling little and, as a matter of pride as well as of necessity, buying next to nothing. In addition, farmers as a class were hampered by the lack of business experience. They were often the victims of sharp practice in buying seeds and implements, and in selling cattle, wool, and miscellaneous produce. Once bitten, twice shy. As a result of these experiences they harbored suspicions, often unjustifiable, of all business men, an attitude which prevented their taking full advantage of genuine market opportunities.

CAPITAL AND CREDIT.

The lack of working capital was a serious hindrance to improvement and to the development of agriculture as a business. For this the farmers themselves were in part to blame. What surplus funds they had were too often laid out in buying more land, or in building larger houses, or invested in outside enterprises, banks, or shipping ventures, rather than reinvested productively in the farm itself. Consequently, when it came to purchasing the new labor-saving farm machinery, or new varieties of seeds or improved livestock, funds were lacking. Production for market, particularly in the case of the more intensive branches, such as truck gardening and milk farming, required larger outlays for hired labor than farmers had been accustomed to make. Here again they found their working capital inadequate. The farmers as a rule marketed their produce once a year, in the winter, and consequently had to provide, either out of their own or out of borrowed funds, working capital for a whole year before they realized anything from sales. The embarrassments arising from this situation were described in the *New England Farmer*:¹

“Their hired hands must be paid in autumn, if not sooner, and if they expect to get store goods and mechanics’ work at a reasonable rate, they must pay as they go along. A farmer sells his pork, butter, cheese, grain, &c. from January to April. The cost of producing all these, was paid, (or ought to have been,) the summer and autumn before. His sheep are sheared in May, and should be able to convert their fleeces immediately into money, (which he cannot always do,) still the whole expense of producing this wool, excepting about two months spring pasturing, was paid the year before, a considerable portion of it the August before.

“It cannot be denied that a farmer can get along after a fashion with little or no capital, because it is done by thousands every year. . . . A farmer without capital, in the first place, will not perhaps hire more than half as much labor as his farm requires; of course all his work is slighted, and all done out of season, and half crops is the consequence. When the time arrives for paying his laborers, perhaps he will get

¹ XII (1833-34), p. 346.

some things out of the store for them on trust, or borrow a little money to pay them in part, and put off paying the remainder until winter or spring, to the no small injury of his credit, otherwise he must force sale of some of his scanty produce at a reduced price, to make out the pay. In the next place he buys of the storekeeper wholly on a long credit, and pays a price accordingly, say twenty to thirty per cent. more than the cash price. His dealings with the blacksmith, shoemaker, and mechanics in general, are after the same fashion. And thus he passes his life continually pinched for the want of a little money, incessantly harassed by duns, and once in a while appalled by a tap on the shoulder, though gentle it may be, of the practised hand of the constable."

Very few farmers made use of bank credit. They needed small loans running from six months to a year and such accommodation the commercial banks were not willing to furnish. Henry Colman wrote: ²

"Bank loans are in general too short and capricious to be safe or convenient for farmers; besides that banks never were designed for farmers; they are only for merchants and manufacturers, and for a much more numerous class, who are the very curse of every industrious community, gamblers and speculators. . . ."

Bankers, in common with other business men, were distrusted and feared. "A farmer should shun the door of a bank," warned the *New England Farmer*,³ "as he would an approach of the plague or cholera; banks are for men of speculation, and theirs is a business with which farmers should have little to do."

The country store, as a previous quotation indicates, was the only source of short time or "intermediate" farm credit. The storekeeper granted credit freely, the rate of interest being not definitely specified but implied in the difference between credit prices and cash prices. Losses were large and actual interest charges were necessarily high. Such a system of credit held many dangers for the farmers.

"Few farmers keep any accounts, and before they are at all aware they have a long score on the trader's books, and that not only for the current price of goods, but enhanced by an additional charge for the delay of payment. But there is another circumstance in this case which is not always considered. In many instances, the trader will purchase the produce of the farmer only upon what is called store pay—that is, making his payment in goods from his store. The farmer, in this way, is not only obliged to sell at the lowest market price, and pay the trader the profit upon his goods, but he and his family are induced to purchase a great many things which they do not need and which they would be better without. This leads likewise to the keeping of an open account; which if not most rigidly watched and frequently settled, is as sure as fate to surprize the farmer with an unexpected and heavy balance against him. This usually produces ill blood between both parties, leading to vexatious lawsuits and all their miserable consequences;"⁴

The increase of mortgages after 1830 on eastern farms was noted with alarm. In some of "the most beautiful New England townships" half of the farms were said to be thus encumbered.⁵ Mortgages resulting from borrowing in order to make permanent improvements might have been good farm finance, but the majority of obligations incurred in this period seem to have been of a different origin, representing either the funding of unpaid bills at the country store or else loans for outside speculation.⁶

² *New England Farmer*, XVII (1837-38), p. 78.

³ XIII (1834-35), p. 368.

⁴ *Fourth Report, Agriculture of Massachusetts* (1841), p. 182.

⁵ *Christian Examiner*, quoted in *New England Farmer*, X (1831-32), p. 1.

⁶ *New York Farmer*, IV (1831), pp. 154, 181.

THE ORGANIZATION OF MARKETS.

The injuries and losses which the farmers suffered from their lack of business experience were aggravated by the imperfect organization of markets. The country merchant was still, as in colonial days, the chief buyer of farm products. His business was mostly the exchange by barter of salt, sugar, rum, and miscellaneous dry goods, for pork, beef, cider, household manufactures, grain, and cattle. By the extension of liberal credit he financed, also, the farmers in his community. The country store combined, therefore, a number of services now rendered by specialized middlemen. It was inevitable that the functions of marketing and financing should have been poorly performed and at high cost. Receiving small lots of miscellaneous commodities of widely differing quality, the storekeeper could make little or no attempt at inspection or grading. The same price was paid for butter, cheese, and pork, whether good, bad, or indifferent. Hence farmers who disposed of their produce in this way had no incentive to improve its quality.

Specialized middlemen began to develop where particular commodities were bought and sold on a large scale. Such were the drovers who took cattle and swine from the farms in Ohio to eastern markets, and from Franklin County and from Maine to Brighton. Even they combined transportation functions with selling on commission. Farmers near the great markets sold their cattle direct to the butchers, and in outlying townships, where cattle fattening was not a specialty, a few animals were sold each year through the country stores. Progress was evident also in the marketing of wool. In the early years, before 1830, the woolen mills were small and scattered, depending on local supplies of raw material. Some manufacturers had their own flocks of sheep. Farmers sold their wool directly to the factories, trudging 40 or 50 miles with their clip and peddling it from one mill to another.⁷ Beginning about 1830 we hear of middlemen, agents of the manufacturers, who travelled through the grazing towns, purchasing wool from the growers.⁸

An interesting beginning in the organization of farmers for united action in marketing is found in the meetings of the wool-growers of Winthrop, Maine, in 1833 and 1834. Complaining of false market rumors circulated by buyers, and of the lack of warehouse facilities, they formulated a program of reform measures which sounds strangely modern. They demanded a decrease in the number of middlemen, and proposed to establish an agency for the collection and dissemination of market information. They planned also to build warehouses where small lots of wool might be deposited as security for loans to the growers, and they urged united action in holding wool for a minimum price of 50 cents a pound.⁹ There seems to be no evidence that the ambitious program was ever carried out or that the organization had more than a brief existence. Somewhat earlier, in 1822, the barley-growers of southeastern Pennsylvania had attempted to remedy unsatisfactory marketing conditions by a bold experiment in cooperation. Believing that the Philadelphia brewers had combined to keep down the price of barley, the farmers

⁷ Conn. State Agric. Soc. *Transactions* (1855), p. 165; North, in Nat. Asso. of Wool Manufacturers, *Bulletin*, XXIV (1894), p. 242.

⁸ *Maine Farmer*, I (1833), p. 211; *New England Farmer*, XIII (1834-35), p. 53.

⁹ *Maine Farmer*, I (1833), p. 178; II (1834), p. 162; *New York Farmer*, VII (1834), p. 301.

determined to brew their own grain and erected a building for the purpose in the city. The venture did not prove successful, and after a few years the plant was sold and the enterprise was abandoned.¹⁰

THE DECLINE OF HOUSEHOLD INDUSTRIES.

The best evidence of the extent and the rapidity of the transition from self-sufficient to commercial agriculture is found in the decline of the household industries. At the beginning of the nineteenth century the typical northern farmer was still clad in homespun cloth made of wool sheared from his own sheep, spun, dyed, and woven in his own home by the women of his household. Many other articles of household furnishing, such as blankets, sheets, and towels, were also made by these hardworking women. Before 1840, however, the household textile industry had been largely transferred to the new cotton and woolen mills, the graceful spinning wheels and the noisy hand-looms were being relegated to the attics of the farmhouses, there to accumulate dust and cobwebs until rescued and restored to posts of honor by the antique-collectors of our own generation. The transfer of the textile industries from farm homes to factories constituted an industrial revolution whose significance in our economic history has often been pointed out. The change has been studied heretofore chiefly with reference to the development of the technique of manufactures and the growth of a class of wage-earning industrial workers. But from the point of view of the history of the rural population, the decline of household industries was as truly revolutionary.

As soon as a cash income could be obtained from the sale of wool or grain, pork, beef, or livestock, butter, cheese, or milk, or garden truck, the farmers began to buy goods that they had formerly produced for themselves. Linen textiles, whose production was more arduous than woolens, were abandoned first, and in their place the cotton goods of the new factories were gladly welcomed. Flax, formerly raised regularly on every farm, was almost entirely neglected from Maine to Ohio, except for the production of flaxseed.¹¹ A contemporary wrote from Ohio in 1838:¹²

“Flax seems to be going out of use, and our people cultivate less of it every year. They prefer cotton to flax, and they prefer too, the cotton cloths of Rhode Island and Massachusetts to their own manufactured cloths. The spinning wheel, the reel, and the loom are not much used in Ohio, especially the two former. Our people prefer buying their cloths from the east, to making them here, and they are right. The production of the articles of food—meat and bread, for the hungry laborers of the east, best suits our present condition.”

Homespun woolens, as well as the factory products, were given a considerable impetus during the years 1807 to 1815, when the importation of European cloths was largely cut off. The introduction of water-power carding machines between 1800 and 1810 lightened the tasks of household manufacture, so that the farm women were able not only to clothe their families more easily, but

¹⁰ Futhey and Cope, *Chester County (Pennsylvania)*, 336.

¹¹ Long, in *N. H. Hist. Soc. Collections*, III (1831), p. 205; Hoskins, *Vermont*, 269; *Massachusetts Agricultural Repository*, VI (1820), p. 309; *2d Report, Agriculture of Massachusetts* (1838), p. 45; *4th Report* (1841), p. 163; Putnam, *Touches on Agriculture*, ch. II, p. 22.

¹² Atwater, *Ohio*, 89.

they had yarn and cloth to sell at the country stores. Niles¹³ estimated in 1816 that in Connecticut 500,000 yards of woolen cloth were made annually in farm homes and dressed at country clothiers' shops. The years 1815 to 1820 probably marked the climax of the household woolen industry.¹⁴ By 1830 there were evidences of its discontinuance. The reports of the annual cattle shows of the agricultural societies show that exhibits of home-made textiles fell off rapidly between 1820 and 1830 in counties where manufacturing and urban concentration were developing most rapidly.¹⁵ Naturally, in districts where the opportunities for the sale of farm products were best, the country people soonest abandoned homespun for boughten cloths. The reports received in answer to inquiries of the Secretary of the Treasury in 1832 emphasize the decline of household manufactures. A report from Connecticut stated:¹⁶

"Individual and household manufactures are so far abandoned as to be comparatively inconsiderable. Hand labor cannot compete with the adventitious aids of machinery moved by water power."

Massachusetts and Rhode Island reports agreed in stating that except in regions remote from markets, such as the islands of Nantucket and Martha's Vineyard and the peninsula of Cape Cod, household manufactures had practically disappeared.¹⁷ Colman, 10 years later, speaks of the household industry of Massachusetts as "completely destroyed," a broad generalization which must be qualified. In a number of instances he calls attention to the persistence of self-sufficient economy in remote townships, but such cases were exceptions, sufficiently rare to deserve especial comment.¹⁸

In New Hampshire a significant decline in household manufactures had taken place before 1830, but at that date about one-half the wearing apparel, bedding, carpeting, etc., used by the population was still home made.¹⁹

The reports received in 1832 from the Middle States contain little comment on household manufactures, but indicate a declining tendency, except in western Pennsylvania.²⁰ In New York the State censuses of 1825, 1835, and 1845 showed a rapid decline in the production of all household textiles. The total product in 1825 amounted to 16,500,000 yards or about 9 yards per capita; 20 years later the total product was 7,000,000 yards, or $2\frac{3}{4}$ yards per capita.²¹

SIGNIFICANCE OF DECLINE OF HOUSEHOLD INDUSTRIES.

The significance of the decay of the household manufactures can hardly be exaggerated. Even before the change was wholly completed, its importance

¹³ *Weekly Register*, X (1816), p. 82. See also *Ibid.*, VIII (1815), p. 234.

¹⁴ Wright, *Wool Growing and the Tariff*, 58.

¹⁵ *Massachusetts Agricultural Repository*, VII (1821), p. 22; X (1831), p. 243; *New England Farmer*, VIII (1829-30), p. 126.

¹⁶ *Documents Relative to Manufactures in the United States* (Ex. Doc. 308, 22 Cong. 1st sess.), I, 977.

¹⁷ *Ibid.*, I, 75, 78, 134, et passim.

¹⁸ *4th Report, Agriculture of Massachusetts* (1841), pp. 156, 178; *2d Report* (1838), p. 61.

¹⁹ *Documents Relative to Manufactures in the United States* (Ex. Doc. 308, 22 Cong., 1 sess.), I, 585.

²⁰ Summarized in Tryon, *Household Manufactures in the United States*, 293.

²¹ *Ibid.*, 304.

was recognized by the leading thinkers of the day. Horace Bushnell said to the Litchfield farmers in 1851:

"This transition from mother, and daughter, power to water, and steam-power is a great one, greater by far than many have as yet begun to conceive—one that is to carry with it a complete revolution of domestic life and social manners."²²

The prophecy proved true. As self-sufficient farming declined there went with it long-established habits and traditions, not only in the method of getting a living, but also in ways of thinking and of living. The *mores* of self-maintenance, to use Sumner's phrase, were revolutionized, and there followed of necessity a change in the ideas and ideals of the rural folk, in family and in social relations.

The self-sufficient economy emphasized the virtues of self-reliance and independence, of frugality and thrift. As Bushnell remarked, it harnessed together in the productive process all the members of the family, young and old, male and female; it concentrated attention upon the interests of the family group rather than upon the interests of its individual members. The introduction of the cash *nexus*, the selling of certain articles and buying of others, forced the farmers to confront a new set of problems, calling for the exercise of a new set of faculties. Shrewdness in buying and selling must now be added to the simpler qualities of hard work and saving. Farming became a more speculative business, for to the already existent risks of weather conditions was added the risk of price fluctuations. Thereafter success in getting a living no longer depended on the unremitting efforts of the farm family, aided by Providence, but to a large extent also upon the unpredictable wants and labors of millions of persons in the industrial villages and in the newer farms to the westward.

NEW EMPLOYMENTS FOR FARM WOMEN.

It is clear that, in the long run, the transfer of the production of textiles from the farmhouse to the factory must have been of advantage to the rural population. Production was far more effectively carried on in the factories, so that eventually the farmers got more goods for a given amount of labor by concentrating their efforts on purely agricultural operations. But only in the long run were the advantages of the change clearly apparent. In the meantime, during the 20 or 30 years of transition, there were a number of discouraging difficulties. There was, first of all, the problem of finding a new employment for the farmers' wives and daughters. Remarks such as the following show how this problem was presented:²³

"It is a deceptive and dangerous economy, which induces a farmer to buy all his woollens of the manufacturer, merely because he can buy them cheap—cheaper even than he supposes he can make them at home. . . . While the farmer is buying at the store, what he could make at home, . . . the members of his family, whose labour could produce the same articles, are unemployed, or employed to little or no purpose."

Colman, who was a clergyman as well as an agriculturist, speaks with regret in several instances of the decline of the household manufactures because the "healthy exercise of domestic labour" has been exchanged for

²² *Work and Play*, 382.

²³ *New England Farmer*, VIII (1829-30), p. 126.

“the idleness and frivolities of pride and luxury”;²⁴ and again, emphasizing the economic rather than the moral aspects of the problem, he speaks of the “internal resources of the farmer” having “dried up.”²⁵

Anyone familiar with the exhausting toil of the farm women of the earlier years might have remarked that they had well deserved a rest. But habit and tradition, and economic pressure as well, decreed otherwise. The traditional ethics required all to be producers and none merely consumers. No one knew what evil work the Devil might find for idle hands, especially if these hands were women's. The fear was expressed that the farmer's daughters would not only lose skill “but they will have more time to be idle, and thus will be less fit for good and profitable wives.”²⁶ Moreover, the wants of the farm family were expanding rapidly. The urban population were establishing a new and higher standard of living; the farmers' daughters wanted better clothes, and pianos like those of their city cousins.

The problem of finding new employment for the farm women was solved in two ways: (1) by their leaving the farms and taking employment in the rapidly growing urban centers, either in factories, or as school teachers, or in domestic service; (2) by the introduction of new industrial occupations in the home. We know how important was the migration of the farmers' daughters to Lowell, Lawrence, and Fall River in the years around 1840, furnishing an indispensable labor force for the new factories, and it would be interesting to trace their fortunes further, but we are concerned here chiefly with those who stayed on the farms. The employments to which the latter now turned their attention were the sewing of shoes, the plaiting and sewing of straw and palm-leaf hats and bonnets, and the production of men's ready-to-wear clothing. An extreme example of the efforts to utilize the surplus labor force on farms is seen in the misguided attempts to hatch silk-worms and produce reeled silk.

BY-INDUSTRIES.

Most of the employments enumerated above were not new. The farm women had long been making their own bonnets and their husbands' and fathers' shirts and underclothes; but whereas formerly such articles were produced principally for home consumption, after about 1830 or 1840 they were produced principally for sale. The organization of production was what is known to economists as the commission system, a transitional stage between household and factory production. The employer was a merchant who provided the straw, cloth, or parts of shoes. He also undertook to dispose of the finished product, paying the workers on a commission basis.

In the making of shoes, the most important of these domestic manufactures, the men were also employed. In some townships in Massachusetts a very large proportion of the population was actively engaged in shoe-making. In 1837, in the town of Grafton for instance, 1,400, or almost one-half of a

²⁴ *Second Report, Agriculture of Massachusetts* (1838), p. 138.

²⁵ “In the changes which, since the introduction of extensive manufactories of cotton and woollen among us, have taken place in our habits of domestic labour, some of the internal resources of the farmer have dried up, and new occasions of expenditure introduced.” *Fourth Report* (1841), p. 181.

²⁶ Wilder, *Leominster, Massachusetts*, p. 29.

total population of 2,900, were officially reported as making shoes.²⁷ A writer in the *New England Farmer* said that the industry in Grafton "is a domestic manufacture, chiefly carried on by men at their own homes, with their own means, where their labors and those of their families alternate with the care of their gardens and farms, promoting health and furnishing recreation."²⁸ Of Essex County, where the farmer shoemakers were most numerous, Colman wrote: "Farming in this county is scarcely pursued as a distinct or exclusive profession; but as subsidiary to some other business or pursuit."²⁹

The farmers carried on a wide variety of quasi-industrial pursuits, by-industries which in some cases were more lucrative than agriculture. Building operations in the growing industrial communities demanded sand, stone, and timber. Besides these, the farms furnished to the city-dwellers enormous quantities of firewood and charcoal, the products of the winter months. The Yankee had long been famous as a whittler, and in these years he turned his experience in wood-working to good account. The extent and variety of the wooden wares produced in some of the more remote communities is astonishing. Partly they were made by farmers in small shops on their own premises, and partly in small factories utilizing water-power, where the farmers worked intermittently in the winter and between seasons. The numerous by-industries carried on by the New England farmers and by their wives and daughters provided an important supplement to the farm income. The prosperity of many communities out of reach of the market influences can be explained only by the existence of these quasi-industrial pursuits.

SUMMARY.

The first four decades of the nineteenth century were characterized by important beginnings in agricultural progress, rather than by striking or revolutionary accomplishments. It was a period of preparation both in the technical and in the business sides of farming—preparation for subsequent progress and expansion. The home market beckoned to farmers with its new opportunities. But the road to successful commercial agriculture was beset with many difficulties and hindrances. The factory villages were drawing the most ambitious boys and girls away from the farm. The competition of the factories raised the wages of farm hands at a time when the prices of farm products were falling or at best stationary. The farmers were hampered by their inexperience in business affairs, by their lack of capital, by imperfect credit and marketing facilities, and by the persistence of the habits and traditions of the self-sufficient economy. The rule that the farm should supply all that the farm consumed had acquired the validity of an article of religious faith. To buy from outside goods which might be produced at home was held to be not only bad economy but also doubtful morality. When production for sale had finally begun there arose the perplexing question what to produce. The eastern farmer discovered he had no monopoly of the home market. Cheaper transportation introduced western competition, causing unstable mar-

²⁷ Massachusetts, Secretary of State, *Statistics of Certain Branches of Industry* (1837), pp. 50, 206.

²⁸ XV (1836-37), p. 57.

²⁹ *First Report, Agriculture of Massachusetts* (1837), p. 14.

kets. Wheat, pork, wool, hops, butter, and cheese all came more cheaply from the West, forcing the easterners to make rapid readjustments.

The farmer did not have to fight his battle alone. The agricultural societies and the farm papers came to his aid with encouragement and advice. They exhorted him to use manures more liberally, to sow clover, and to plant roots, to take better care of his livestock, and to pay more attention to breeding. They called to his notice the new labor-saving machinery and stimulated interest in new varieties of grain and in improved types of sheep, swine, and cattle. The educational propaganda was necessarily defective, however, for the natural sciences, such as chemistry, biology, and botany, were still in their infancy and their application to agriculture had scarcely begun. Editors and speakers might urge the farmer to use gypsum or lime, or to choose breeding stock more carefully, but not one of them could tell him how plants grow, whether they derived nourishment from the atmosphere or the soil, or from both, and no one could explain to him the laws of heredity lying at the basis of all scientific breeding. In matters of farm economics sound leadership was lacking. Both the publications of the agricultural societies and the farm papers contained fallacious arguments against leaving the beaten paths of the self-sufficient economy. We read in the *Memoirs* of the New York Board of Agriculture: ³⁰

“In regard to economy, the general committee would remark, that the farmer who understands and practices his own business, in the right way, is a true economist: his farm should produce every thing necessary to sustain life in a comfortable and respectable manner; and he should surround himself with every thing that he wants, by his own industry.”

Twenty years later we find Colman ³¹ asserting that

“it must be considered as an established principle in domestic economy that every farmer should look to his farm for all that his farm can furnish him. Though it may seem better to sell his wool and buy his bread, yet in all such cases he pays a double commission, to the purchaser of the wool and the seller of the bread, who must both get their living out of the operation.”

It was the principle of self-sufficiency applied to the whole region rather than to the single home which explains the absurd attempts to promote wheat cultivation in New England by State bounties. As astute an agriculturist as Ezekiel Holmes denied in 1837 that Maine could not successfully compete with New York in raising wheat. He wrote: ³²

“The time has been when the citizens of Maine raised more wheat than they consumed, and exported it in large quantities. What has been done can be done again. It is all idle to say that we cannot raise wheat. Our average crop per acre is equal to the average crop of New York per acre. The reason is, we do not cultivate as many acres. It is true we cannot raise winter-wheat so well as they can, and that brings the labor of our wheat crops into a smaller compass of time than theirs, but we can raise as much and make as good flour if we can only sow as much, and were as careful in flouring it. All we need is energy in this matter.—More courage and less crying out ‘there’s a lion in the way—there’s a lion in the way.’”

Advice of this kind, as subsequent events proved, was not forward-looking. Men who wrote and talked in this strain showed no conception of the readjust-

³⁰ I (1821), p. xxx.

³¹ 4th Report, *Agriculture of Massachusetts* (1841), p. 159.

³² *Maine Farmer*, V (1837), p. 81; see also IV (1836), pp. 258, 386.

ments in eastern farming which western competition was to bring about. The advice they gave the farmers was comfortable rather than stimulating, tending to confirm them in their old habits of self-sufficiency and in their traditional isolation from market influences. But in the midst of the confusion of faulty reasoning based on imperfect knowledge, there was occasionally raised the voice of a true prophet, with clearness of vision to foresee the inevitable westward trend in certain lines of production, and courage to proclaim his vision to a doubting generation. Such a prophet was William Buckminster, the orator at the Concord, Massachusetts, cattle show of 1838. He said:³³

“If more fertile regions can supply our cities with grain at a cheaper rate than we can, let us not lament. We shall find full employment in furnishing what cannot so well be transported from a distance. Fresh meats, butter, hay, and the small market vegetables must be supplied by the farmers of N. England.

“Beef cattle cannot cross the North river to compete with ours, and if we fail to supply all the wants of our own markets we can furnish those that are most to our advantage. It is believed that the raising of grain of any kind and fitting it for market is the most laborious and the least profitable employment we engage in; and we should bear in mind that grain is the greatest exhauster of the soil.

“The times are changed and we must change with them. We cannot now, as formerly raise much grain for the market.

“The virgin soils of the west and the increasing facilities of intercourse with that region render it probable that much of our grain will be imported thence; and when no obstacles are thrown in the way of commerce, this is no evil. We purchase, not because we cannot produce the same commodity, but because we can produce others to more profit.

“Let them supply our cities with grain. We will manufacture their cloth and their shoes. Our artists may eat bread from the west—we will supply them with what cannot be brought from a distance.”

³³ *New England Farmer*, XVII (1838-39), p. 113.

PART IV
NORTHERN AGRICULTURE 1840-1860
THE PERIOD OF TRANSFORMATION
BY
JOHN I. FALCONER, PH. D.

CHAPTER XX.—NORTHERN AGRICULTURE IN 1840.

NEW ENGLAND FARMING IN 1840.

In New England, in 1840, hay was the leading crop. The "new system of agriculture" had become well established on tillable land, and a rotation of crops was followed, including corn, potatoes, or oats, wheat or rye, and grass. Instead of pursuing a definite order of cropping, as in Chester County, Pennsylvania, the land was usually allowed to lie in grass as long as it would yield 1 ton of hay to the acre. More attention was given to grazing in New England and less to grain growing. The purpose of sowing a grain crop was said to be largely to supply the farm with grain and to renew the land in grass. For 20 years improvements had been taking place in the eastern field system. The use of clover had spread rapidly, gypsum and lime had come into extensive use, rotation systems were more widely practiced. Lowlands were more frequently plowed and manured, uplands more frequently seeded to clover and grass. The adoption of the cast-iron plow had allowed much improvement in the preparation of the land. Cattle-grazing, wool-growing, and dairying had developed rapidly.

Soil improvement was a characteristic of the progress in agriculture in the East during the decades 1820 to 1840. In fact, "the New System of Husbandry" had begun, similar to that inaugurated in England. Its principles were summarized by Judge Jesse Buel, editor of *The Cultivator*, who asserted that lands would not wear out if they were judiciously managed; but, on the contrary, they could be made to increase progressively in productivity. He wrote:¹

"The principles of the new husbandry also teach that by carefully saving, and suitably applying, all the fertilizing matters afforded by the farm; by an alternation or change of crops, and by artificially accelerating or retarding the agency of heat, moisture, air, and light, in the process of vegetable growth; by draining, manuring, ploughing, harrowing, hoeing, etc., we may preserve, unimpaired, the natural fertility of our soils;—and that, with the aid of improved implements of husbandry, and a good system of management, we may also greatly increase the profits of its culture."

It was urged by many that the adoption of "the New System of Husbandry" was the most effective way for the Eastern States to meet the competition of the West.

During the thirties, fine wool-growing had been considered a profitable enterprise and had been extensively pursued, together with dairying, in all the New England States, especially in Vermont and in the Berkshire region of western Massachusetts and Connecticut. With the general fall of prices after 1837, the price of wool had declined, and by 1840 eastern wool-growers were declaring it no longer profitable to produce fine wool. About this time, moreover, the increasing population and wealth of the eastern manufacturing cities, the extension of cotton planting in the South, and the development of

¹ Buel, *The Farmer's Companion*, 21.

an export trade in cheese were causing an increased demand for meat and dairy products. By 1840, cattle-grazing and dairying were considered more profitable than wool-growing in New England, and were increasing, while the latter was rapidly declining.

Swine-raising was also receiving decreasing attention on New England farms in 1840, owing to the competition of western pork, to the development of new markets, and to the adoption of improved farming methods. With the coming of cheap western pork the New England farmer found it profitable to keep only enough swine to consume the waste of the farm, and at the same time crop rotation, dairying, and commercial agriculture were tending to reduce farm waste. The potato crop, which formerly had furnished an important part of the swine ration, greatly decreased in amount and increased in value after the appearance of the blight in 1844. Corn, which was formerly used in fattening swine, was now, on account of its increased value, diverted to cattle. Wool, pork, and wheat were all declining in New England by 1840, while dairying and the production of hay, corn, vegetables, and fruits were increasing.

The area of improved lands in farms in the East was not shown in the census of 1840. Production figures, however, seem to indicate a small increase of improved acreage in this region in the years 1840 to 1850. For the eastern farmer the age of farming by extension of area had ceased and that by increased investment of capital had well begun. By 1840 a summer fallow was rarely seen in New England, in eastern New York, or Pennsylvania, except in the more remote regions; the practice was rapidly declining in the Mohawk Valley of New York. Diversified farming with cattle and sheep grazing had become the prevailing system.

The New England farmer had several other sources of income, aside from the products of his fields. In Maine and in northern New Hampshire farming was still closely connected with lumbering, and in many sections more attention was given to the latter than to the former. Working in the woods in the winter and on the farm in the summer was a common practice. Teaming to the cities and to seaboard towns was another source of income. In Vermont, the manufacture of maple sugar was a flourishing enterprise.

IN EASTERN AND CENTRAL NEW YORK.

In eastern and central New York, conditions of farming in 1840 were much the same as in New England. Cattle-grazing and dairying were receiving increased attention, the latter having taken the place of wheat as the chief source of income.² The Hudson and Mohawk Valleys were the leading dairy sections of the country. Orange, Dutchess, Herkimer, and Oneida Counties were all famous for their dairy produce. Wool-growing, one of the former chief sources of income, was rapidly declining. Wheat and hogs showed a tendency to decrease.

Throughout the East, the growth of cities, as yet without railroad connections with the interior, was leading to intensive farming in their vicinities. On Long Island, wheat, rye, and corn had formerly been the staple products;

² N. Y. Agric. Soc. *Transactions*, I (1841), p. 135.

but the opening of the Erie Canal and the consequent competition of western grain, together with the development of the New York market, had changed the type of agriculture. The central part of the north shore of the island in 1840 were largely devoted to corn, oats, and hay, with vegetable crops in those parts best suited for their production. On the south side of the island, where the soil was light, sandy, and warm, early vegetables and small fruits were grown with great success by the aid of ashes and manure brought out from the cities.³ Two crops were frequently taken from the land in one year. Market gardening and small-fruit growing were developing in New Jersey, Delaware, and along the shores of Chesapeake Bay in Maryland.

In the vicinities of the large eastern cities, such as Philadelphia and New York, the selling of veal calves was found a very profitable enterprise. In Queens County, New York, which supplied the New York market, a good calf at a month or six weeks old was said to be worth as much as at 2 years of age.⁴ The supply of milk for many of the large cities was furnished in part by herds of 200 or 300 head of cattle, fed the entire year on brewers' grains. In the vicinity of Rochester, New York, it was said to be profitable to keep a cow to an acre of land.

IN SOUTHEASTERN PENNSYLVANIA.

In southeastern Pennsylvania, one of the old and important centers of improved agriculture in 1840, three systems of husbandry were practiced: (1) The cropping system, which was usually followed by the German farmers on the best land. In this system nearly all the land was cropped in a rotation of corn, oats or barley, wheat, and clover. (2) A mixed system, in which a part of the farm, well watered, was kept aside for permanent pasture and received a frequent top-dressing of lime, or short manure. The remainder was cropped as in the first system. (3) The grazing system, uniformly adopted in the eastern counties near Philadelphia for dairy purposes, and for feeding cattle for the shambles. Very little plowing was done in this system, and merely enough grain was raised for the consumption of the family and livestock, the remainder of the farm being given to pasture and hay.⁵ Near the cities and large towns, where the farms were generally smaller, fruit, vegetables, poultry, fresh butter, and other articles for immediate consumption were found profitable and occupied much attention. Scarcely a farm was to be found without its apple orchard of choice and selected varieties. Chester County, especially, was constantly held up by the agricultural papers and periodicals of the time as a striking example of the "improved system" of agriculture; in particular it was noted for the feeding of western cattle. The adjoining county of Delaware was famed for the quantity and quality of the fresh butter, veal, and poultry which it furnished to the Philadelphia market. Both counties were praised for their clean and well-arranged farms, for the well-built fences that divided the farms into 7 to 12 inclosures, for the well-constructed farm buildings located, where practicable, in the immediate vicinity of a spring.

³ *Cultivator*, new series, VI (1849), p. 298.

⁴ N. Y. Agric. Soc. *Transactions*, II (1842), 187.

⁵ *Ibid.*, I (1841), p. 168.

THE PENNSYLVANIA BARNs.

The barns were large enough to permit the storage of all the produce of the farm, the livestock, and the tools. Writing in 1843, Trego reports: ⁶

"The traveller in older settled parts of Pennsylvania is particularly struck with the neat and substantial appearance of the buildings, fences, etc., as well as the order and convenience of the whole domestic arrangements of a well regulated farm. The pride of a Pennsylvania farmer is his barn, many of which are from 60 to 120 feet in length and substantially built, either wholly of stone, or the lower story of stone and the superstructure of wood, handsomely painted or white-washed. The interior arrangement of stables, thrashing floors, granaries, places for depositing hay, etc., is admirably convenient and useful. The horses, cattle and other domestic animals are comfortably sheltered during the winter, and like their master and his family, enjoy the plenty provided by good husbandry and provident industry. Within the last few years considerable attention has been given to improving the stock of domestic animals; a subject which has been too much neglected by our farmers."

LACK OF PROGRESS IN MARYLAND AND IN DELAWARE.

The Chester County system of farming was also carried on in central New Jersey and northern Delaware, and to a limited extent in Maryland. But in the latter State, as in Virginia, continued cropping to wheat, corn, or tobacco, together with the failure to keep much livestock, had so greatly reduced the fertility of the soil that it was widely proclaimed that there was no longer profit in farming. While the States to the North had greatly improved their agriculture by 1840, Maryland and Delaware had made but little progress. A common practice in the tobacco region of the west shore of Maryland was to cut down and clear as much land during the winter as could be planted in tobacco the following spring, and to continue that crop on the land until it would no longer raise tobacco. Then wheat, corn, and oats were grown until they were no longer profitable, and finally the land was thrown out as "old fields." While one piece of land was in the course of exhaustion, another tract was cleared and treated in the same manner. Shallow plowing was said to be one of the most prominent defects in Maryland agriculture.⁷ Gideon Smith thus expressed his opinion of the agriculture of Maryland in 1842:

"The crops are generally inferior in quantity to those of the northern states. There are exceptions, it is true, but they are mere exceptions. . . . It is believed that the average yield of corn per acre will not exceed twenty bushels, and that of wheat not twelve; and that the average profits of agriculture in the state will not exceed three per cent on the capital invested."⁸

THE MIDDLE REGION.—WHEAT AND ITS MANAGEMENT.

Western New York, the western counties of Pennsylvania, and eastern Ohio was the leading wheat-growing region of the North in 1840. Wheat, sheep, and cattle were the leading sources of income. Dairying was rapidly developing in the Western Reserve of Ohio and in a few counties of western New York. The opening of the Erie Canal in 1825 and of the eastern Ohio Canal in 1832 had given an outlet to eastern markets to the farmers of western

⁶ *Geography of Pennsylvania*, 112.

⁷ *N. Y. Agric. Soc. Transactions*, II (1842), p. 225.

⁸ *Ibid.*, p. 223.

New York and of eastern Ohio. Large quantities of cheese were annually exported through the Erie Canal to the East, and also carried by canals and rivers to the South, and by the Great Lakes to the West.

In 1840, Ohio led the States in wheat production. Summer fallowing, which in the northeastern States had largely ceased by 1840, was a characteristic feature of the cropping system. This ancient practice had already passed from New England, and with the rapid development of dairying it was rapidly disappearing from the region of the Mohawk Valley. In the prairie region it did not prevail to any wide extent. The earlier practice of bare fallow from April to seeding time, however, had been largely abandoned. It was now usual to begin the fallow by plowing under a crop of clover, peas, or a pasture sod during the last of June, to plow again in August, and again about the first of September, and then to sow the wheat and harrow it in. In western New York it was not uncommon to take two or three crops of wheat from the same field with only a fallow intervening. Then the land was seeded with clover which was mowed or pastured for 2 or 3 years, after which the land was again seeded to wheat. On the newer and richer lands of eastern Ohio some farmers were producing wheat in a rotation of wheat, corn, and oats, without fallow or manure. Others were sowing wheat after wheat for a succession of years with only an occasional crop of corn intervening. However, more attention to rotation and the application of manure began to be evident. Gypsum was extensively used on clover and wheat. Drainage and subsoil plowing were much discussed and sometimes practiced.

THE WEST.

There were over a million people living in the States of Indiana and Illinois in 1840, 200,000 in Michigan, and 31,000 in Wisconsin. West of the Mississippi River, Missouri had a population of 380,000, and Iowa had about 45,000 settlers, mostly living along the river. (See fig. 33, p. 277.) The total population living west of Ohio was only slightly greater than the population of that State. The population of Ohio was only three-fifths that of New York State. The total area of improved land in farms in the territory of Indiana, Illinois, Michigan, Wisconsin, Iowa, and Minnesota was only slightly greater than that of New York State alone. While the agriculture of the East was undergoing a change in character, the West was entering upon a period of rapid expansion of the area of land in use. In 1840, the chief region of production in the West extended along the Ohio and Illinois Rivers and northward along the Mississippi and westward along the lower course of the Missouri River. The open prairie to the north was as yet hardly entered, for settlement had held close to the woods and rivers. The early settlements along the Ohio and lower Missouri and the Mississippi Rivers had benefited by cheap transportation to southern markets. Southern Michigan, at the western end of Lake Erie, was now attracting settlers. Railroads had not as yet been built.

Because of the distance of markets and the lack of means of transportation, agriculture was chiefly of a self-sufficing character. The pioneer farmer had only recently cleared his farm from the wilderness, or perhaps was still engaged in that task. He still produced his own meat and grain, and much of his clothing, with the implements which he had at hand, while outside work,

or the sale of a few hogs or cattle or wheat or corn, procured salt and other bare necessities of life.

FARMING IN KENTUCKY AND MISSOURI.

In a few centers in the West, however, a thriving commercial agriculture had already developed. The vicinity of Cincinnati, Ohio, including the Bluegrass region of Kentucky, was the leading agricultural district. Just as Chester County, Pennsylvania, was regarded as the model of improved agriculture in the East, so the limestone region of Kentucky was famous in the West as the center of prosperous and contented agriculture. Its bluegrass pastures were widely known, and its wealthy farmers, who raised corn, hogs, and mules and grazed large herds of Shorthorn cattle and saddle horses. The agriculture of western Kentucky was of a type decidedly different from that of the bluegrass region. Crops were scanty. The inhabitants lived almost entirely on the scanty production of their rough fields, breeding a few scrub steers, making baskets, burning out tar, and digging ginseng root.⁹ West of the Mississippi River there was a small center of commercial agriculture along the lower Missouri River. Corn, swine and cattle, with hemp and tobacco in Kentucky and tobacco and mules in Missouri, were the leading sources of income in these regions. In southeastern Ohio, western Kentucky, and central Missouri tobacco was extensively produced. Nearly 6,000,000 pounds of tobacco were raised in Ohio in 1840, almost entirely in the southeastern counties.

CORN AND CATTLE FATTENING.

The corn-producing region of the North, in 1840, comprised central Kentucky, southwestern Ohio, central Indiana and Illinois and later southeastern Iowa, and the lower valley of the Missouri. (See fig. 74, p. 339.) Climatic conditions were suitable to the crop, and the fertile, easily worked, river-bottom lands seldom failed to produce a large yield. So rich were they, indeed, that often wheat could not be grown upon them profitably for several years after breaking, because the rank growth of straw caused lodging and made the crop especially liable to attacks of rust. But large crops of corn were frequently grown for 30 years in succession. The Mississippi, the Ohio, and the Missouri Rivers, and their numerous important tributaries, such as the Scioto, the Wabash and the Illinois, not only furnished in their bottoms the richest corn ground, but also afforded an outlet for the crop to the market which was rapidly developing in the South. The Scioto Valley had become the Western feeding center for fat cattle to be driven to the East. The large quantity of corn which could be produced with a small amount of labor, the market for the grain in the South, the fact that pork production required only corn and clover and a few oats and peas, and that beef could be raised on corn and the open prairie, with a little clover and timothy, all combined to make corn a favored crop. Cattle pastured on the prairies, partially fattened on corn, and driven East, were a leading source of income. Swine and the manufacture of whisky consumed much of the surplus corn, which, in its original form, would not bear the cost of transportation to market.

⁹ *Country Gentleman*, VIII (1856), p. 121.

Wheat-growing, however, was by no means neglected in the West. In 1840, southwestern Ohio and southeastern Indiana raised notable crops of wheat. Michigan was beginning to attract attention as a wheat-growing State, and the settlers moving into Wisconsin were turning their attention largely to this grain.

While a few small areas, such as that around Cincinnati and in the Bluegrass region of Kentucky, had a well-developed agriculture by 1840, the farming west of the Alleghenies was distinctly of the pioneer type, characterized by limited markets and capital, abundant land, and the absence of intensive farming. The prairie country had nearly all been left for future settlement. A study of the maps showing the distribution of population and of the crops and livestock shows that northwestern Ohio, northern Indiana, northern Illinois, and northern Wisconsin were sparsely populated in 1840. Population had thus far followed the rivers and wooded regions and avoided the prairies, but the latter were now attracting attention and were destined to wield a powerful influence upon the future progress and character of American agriculture.

The western pioneer was living in a dynamic age. Crops were in a measure untried. No one could say whether the western farmer would best produce grass or fruit, corn or wheat, sheep, hogs, or cattle. The new territory with its unknown possibilities of soil, climate, healthfulness and markets was now being occupied by a generation of men many of whom had seen the pioneer emerge from a forest-covered area to the prairies, where an abundance of fertile land lay ready for the plow. High expectations were held of the results which would follow the development of agricultural machinery, cheaper transportation, and the connection of science with agricultural practice. Immigrants were coming from the wheat, corn, and fruit-growing regions of the East and South, from the dairying and sheep-raising regions of the East, from the hemp and tobacco-growing regions of the South, and from various countries of Europe. To many the new situation seemed to afford boundless opportunities, but others were doubtful and uncertain. The distance from markets and the high cost of transportation limited the sales of the farmers to products of high specific value. A period of severe depression and low prices had followed the panic of 1837. The lack of means of the majority of immigrants, together with the wealth of the productive soil, favored the production of such commodities as derived a large part of their cost from the land and as afforded most immediate profit. Farmers and immigrants were all asking what they could raise that would sell.

CHAPTER XXI.—THE INFLUENCE OF THE PRAIRIES ON THE PROGRESS OF AGRICULTURE.

If one reads an account of the agricultural history of England during the middle years of the nineteenth century, and then turns to the records of American agriculture during the same period, he must be impressed with the very evident fact that those features regarded as distinctive and characteristic of agricultural organization in the northern portion of the United States during this period had their foundation largely in the presence of an abundant, available supply of practically free but fertile land. Extensive farming, soil exploitation and the development of farm machinery were outstanding characteristics of American agriculture. The westward expansion of settlement and agricultural production was a dominant feature of the period.

The preemption act of September 4, 1841, was the most important legislation of the period affecting the disposal of the public lands of the West. Heretofore land had been sold at public auction; the act of 1841, however, allowed actual settlers to buy their land at private sale at the minimum price of \$1.25 per acre. This method of sale prevailed throughout the period and until the passage of the homestead act of 1861. Tracts as small as 80 acres could be purchased. After 1850, railroad lands were also placed in the market. The emigrant to the West could now select and buy his farm as soon as he arrived.

Until about 1830, the extension of the region of agricultural production into the "west" had been largely through a forest-covered region. At the beginning of the century a nearly unbroken forest extended from the Atlantic coast westward to the far end of Lake Erie on the north and beyond the Mississippi on the south. In the settlement of western Pennsylvania and New York, eastern Ohio, Kentucky, southern Indiana, and southern Illinois the first task of the immigrant in the production of crops was the clearing of the land of brush and trees. The fertile limestone region of Kentucky and the bottom lands of the Ohio, when first occupied by the pioneer, were covered with large timber, beneath which was an undergrowth "plentifully interspersed with briars and thorns." To grub the trees and remove the undergrowth was a laborious task.¹ Many years of hardship and toil were required before enough land was cleared to maintain a family. The first year "a patch," perhaps, was cleared for potatoes and corn, the next year a field for wheat. Even after the trees were felled and burned, the stumps and roots remained to interfere with the plow and harrow. Fifteen or even 20 years were commonly estimated as the period of time elapsing between the deadening of the trees and the disappearance of the logs from the fields; to open a farm of a hundred acres was the work of years.²

¹ Beddall, *Blue Grass Region of Kentucky*, 90.

² Howells, *Recollections*, 115; Beddall, *Blue Grass Region of Kentucky*, 90; Beatty, *Essays*, 62-69; *American Farmer*, II (1820-21), p. 130.

THE OAK OPENINGS AND SMALL PRAIRIES.

By 1840 the movement westward had emerged from the timber and had reached the prairie region. (See fig. 33, p. 277.) Many of the small prairies of Ohio and Indiana adjacent to rivers and timber had already been settled, including the prairies of Stark County, the leading wheat county of Ohio, which were first farmed about 1833.³ Ellsworth, in his *Valley of the Upper Wabash* (1838), stated that only within the last few years had the settlement of the small prairies of that region begun. Oak openings, the small prairies, and the large prairies adjacent to timber in Michigan, Indiana, Wisconsin, Illinois, and Missouri were then being settled. Here the expense of developing a farm was considerably less than in the forest region. Southern Michigan, typical of much of the region settled during this period, was thus described by a resident in 1847:⁴

“These portions of Michigan which are classed as ‘openings,’ are usually a beautifully varied country, sparsely timbered, chiefly with oaks. Among the several species of these, the white is predominant, and has the largest growth; next the black or yellow and burr oaks. Hickory is often intermixed to a considerable extent. What are called ‘plains,’ resemble the openings but have less timber, and are often almost destitute, approaching the character of ‘prairies.’ Somewhat more than half of the peninsula consists of openings and plains, and these are occasionally varied by tracts of heavily timbered land, and by prairies destitute of timber. The latter are not frequent, and are of much less extent than the prairies of Illinois, comprising from a few acres to 15,000 acres. ‘Marshes,’ or wet prairies frequently occupy the hollow and level spots of the openings and plains, and consist of an accumulation of peat and vegetable matter, producing a rank growth of wild grasses. . . . These grasses are relished by all kinds of cattle, and are so abundant and esteemed that in many parts of the country they constitute the only winter fodder of cattle, horses, and sheep. Many farmers think them preferable to any of the cultivated grasses, for all kinds of stock. . . . To new settlers these marshes have proved invaluable, by enabling them from the first to support their stock with scarcely any cost.”

The timbered openings comprised the larger part of the land under cultivation in Michigan before 1847.⁵ The openings of Dane County, Wisconsin, have been described as

“Immense ‘orchards’ of stately oaks—usually the burr oak—standing well apart, their superb tops spreading over a radius of forty or fifty feet, yet with plenty of room for wind and sunshine between, favoring the presence of prairie grasses or hazel brush.”⁶

Frequently there were but two or three dozen oak trees to the acre, the ground beneath being covered with oak and hazel brush, with an indifferent show of prairie grasses. In other places the ground was free from underbrush, except at the edges of the timber, where the hazel brush seemed to be an advance guard constantly encroaching on the prairie. The “barrens” of Iowa were about half-way between prairie and timber land, the trees standing apart like an orchard, the ground beneath being covered with grass, the sod of which was much less tough than that on the prairie. The land in these oak openings and plains was usually broken “by powerful ox-teams hitched to plows of immense proportions, and only occasionally was it necessary to turn aside from some oak, or to use grub-hoe and axe to remove roots too large or

³ Klippart, *The Wheat Plant*, 343.

⁴ *Cultivator*, new series, IV (1847), p. 270.

⁵ U. S. Patent Office, *Annual Report*, 1847, p. 405.

⁶ Hibbard, *Agriculture in Dane County, Wisconsin*, 83.

too hard to be cut by the share." ⁷ Much of the labor necessary during the previous decades in clearing the underbrush and timber before the crop could be planted was now avoided. In southern Michigan and Wisconsin and in northern Ohio and Indiana the timber land, openings, and small prairies were generally intermixed; but west of Ohio, larger prairies were found, and the timber areas were smaller. The northern and east-central portion of Illinois was largely prairie with very little timber. ⁸ The timber usually skirted the rivers and small water-courses or was scattered through the prairie in groves.

WHY HAD EARLIER SETTLERS AVOIDED THE PRAIRIES?

Settlement in the prairie region before about 1850 had taken place in the openings, on the smaller prairies, or near the junction of prairie and timber, but the open prairie had been generally avoided. ⁹ The numerous groves and the timbered land bordering the rivers and creeks of the prairie region had been favorite locations for settlers, although, as early as 1845, a few of the more venturesome had gone far into the prairies. ¹⁰ The appearance of the prairie near Peoria, Illinois, was thus described in 1849: ¹¹

"We went up on 'Holbrook's knoll,' a height a short distance southwest of the present village of Waterman, and from that elevated point surveyed the land. Southward an immense tract of treeless, undulating prairie, dotted by scattered cabins near the timber, was spread out before us, the view bounded by Shabbona Grove, Pritchard's Grove and Ross Grove to the right, by Indian Creek timber in front and by Somonawk timber to the left. Eastward was Squaw Grove and northward was the boundless prairie, the view in that direction unbroken by house or tree so far as the eye could reach."

Idealists and practical men differed regarding the ultimate usefulness of the Illinois prairies for agricultural purposes. Some thought that they had been especially reserved for the agricultural millennium which was now about to dawn; others that they would not be brought into cultivation for centuries to come. One urged speculators to buy up the centers of the large prairies and plant them with trees. ¹² Another writes: "I have not a single doubt that Illinois alone, is capable of sustaining a population of twenty millions." ¹³ The great objection to the prairies as a place of settlement during the early years was the absence of wood and water. Roads into the prairies were nearly impassable in the spring because of the deep mud. It was difficult to make the wooden-moldboard plow, or even the cast-iron plow, do satisfactory work in prairie soils. It is said that immigrants from the wooded regions of the East and South, or from foreign countries, frequently chose timber land, because it resembled the country from which they came. In the eyes of many an eastern traveler the lack of stone material for building was a serious deficiency. The fever and ague also were frequently urged as reasons for avoiding the prairies. It was thought by some that for farmers without capital the timbered

⁷ Hibbard, *Agriculture in Dane County, Wisconsin*, 84.

⁸ Gerhard, *Illinois As It Is*, 276.

⁹ U. S. Patent Office, *Annual Reports*, 1850, *Agriculture*, 403.

¹⁰ *Ibid.*, 1845, p. 388.

¹¹ Marsh, *Recollections, 1837-1910*, p. 36.

¹² Sears, *Pictorial Description of the United States*, 548.

¹³ *Western Farmer*, I (1839), p. 147.

land was the better ; but that, when capital was added, the openings and plains were preferable.¹⁴ Of the many reasons advanced for avoiding the prairies, that which was most often repeated by contemporary writers, was the lack of wood and water.

So long as land was available for settlement on the smaller prairies or along the edge of the timber, the newly-arrived immigrant was able to provide himself with a farm consisting of both wood and prairie land. The timber land furnished him fuel and fencing material, lumber for his buildings, mast for his hogs, and protection from winds and storms. The adjacent prairies provided tillable land, abundant range for cattle, and a supply of winter forage free for the gathering. As soon as settlement broke away from the timber, it was necessary for the farmer on the open prairie to carry the material for fuel, fencing, and buildings from the timbered land.

There was much difference of opinion regarding the relative advantages of woodland and of the prairie for a new settler. Judge Hall, in his *Notes on the Western States* (1838) wrote: ¹⁵

“ A farmer had better settle in the midst of a prairie, and haul his fuel and rails five miles, than undertake to clear a farm in the forest. The farmers of Illinois are beginning to be aware of this fact, and there are now many instances in which farmers, having purchased a small piece of land for timber, in the woodland, make their farm at a distance in the prairie.”

This seems to have been more frequently the opinion of travelers, however, than of actual settlers. The open prairie furnished no protection from the wind and storms.

To supply drinking-water for man and beast was another perplexing problem of the prairie farmer. At a distance from rivers or springs, he had to rely mainly for water upon wells, but rock and timber were scarce and wells must be driven deep, with no other implements except picks and shovels. Under such conditions well-digging was indeed a difficult task. Consequently, the introduction of well-drilling machinery was of great importance in later stages of prairie settlement.

During the decade 1840 to 1850, farming in the prairie region had returned but small profits. Although western farmers might raise 4 bushels of wheat or corn or 4 pounds of beef or pork as cheaply as the eastern farmer could raise 1 pound, yet the 1 bushel or pound at the East brought more money than the 4 in the West. During much of this time the interior farmer could not sell any of the products of his farm at his home for cash at any price, and the cost of transportation to a cash market was in many instances equal to their entire value. Under such conditions it is not surprising that the settlers in the prairie regions were reluctant to leave the vicinity of the wooded region, which supplied them with the necessities—timber, water, and protection—to take up land in the open prairie, with its uncertain returns.

CONDITIONS FAVORING SETTLEMENT OF PRAIRIES AFTER 1840.

Many causes were leading to the settlement of the prairies, however. As a result of the rapidly increasing tide of immigration to the West, nearly all

¹⁴ Blois, *Gazetteer of Michigan* (1838), p. 27.

¹⁵ Hall, *Notes on the Western States*, 103.

the available land surrounding the large prairies in the older settled region east of the Mississippi had been taken by actual settlers, or by speculators before 1850. It was now becoming necessary, in order to obtain productive land, either to go still farther west in search of the favorite mixture of woodland and prairie, or to break away from the timber. The prices of wheat, corn, beeves, and hogs in western markets had begun about 1845 to show a rising tendency. (See pp. 312 et seq.) The reaper was coming into use, allowing the farmer to harvest more extensive fields of grain and putting a premium on the open, level, prairie-lands. The steel plow which would scour in the prairie soil was taking the place of the cast-iron plow.¹⁶ It was the building of the railroads across the prairie region during the decade 1850 to 1860, however, that opened the prairies to profitable agricultural production. Better markets were now provided, the demand for wheat and corn land increased, returns were more certain. Fuel and building material might now be secured from Chicago or from the timbered regions by railroad. Finally, the high prices of wheat during the middle years of the decade at once overcame all prejudice to any land with available markets which would produce that crop. Former objections dwindled in importance and settlement spread over the open prairies.

With the development of prairie agriculture, the progress of settlement in the wooded regions was somewhat checked. The woodlands were now passed by. There was talk of abandoned farms in the East. Emigrants from New York and New England who had settled in the wooded region of eastern Ohio now moved further west to take up a prairie farm in Illinois, Wisconsin, or Iowa. Between 1830 and 1840 the State of Michigan had come into being and the Territory of Wisconsin and Iowa had been created. The removal of the Sacs and Foxes from northern Illinois and Wisconsin opened that region to pioneers. Between 1850 and 1860 Iowa was admitted to the Union as a State and the Territories of Minnesota, Nebraska, and Kansas were organized.

PIONEERING ON THE PRAIRIES.

In contrast to pioneering in the wooded regions, the prairie farmer had no brush to grub or timber to cut before planting his crops. A thick grass sward covered the soil and, although it required the strength of 3, 4, or even 6 yoke of oxen to break the sod for the first time, within 2 or 3 years it was cultivated with the same ease as other lands. Arriving in the spring, at the expense of only one plowing and a thorough harrowing, the emigrant with good fortune might obtain a crop of sod corn and potatoes the first year, and a crop of wheat, barley, or oats the second, from as large a portion of his land as his means would enable him to bring under the plow. Its freedom from stumps, stones, and falling branches enabled him to avail himself of all the varieties of machinery used in farming, such as planters, drills, reapers, and mowers.

COST OF DEVELOPING A PRAIRIE FARM.

To the newly-arrived immigrant in the prairie region the cost of developing a farm was a matter of first importance. Having generally but limited means,

¹⁶ *Prairie Farmer*, XI (1851), p. 10.

he was compelled to get all he could from the land with the least possible outlay. Time was the important element in the development of a farm in the wooded region, but when the prairies were reached and a farm could be developed in one year, capital and markets were of greater importance. Caird¹⁷ gives the following account of the process of settlement in the prairies:

“The first care of an American Settler on the prairie is to provide for the first winter. If he starts in May he ploughs a few acres up, and very commonly plants the Indian corn on it by making a slit with his axe on the tough upturned sod, into which he drops the seed. . . . Having thus started his ‘sod’ corn, he constructs his house, and spends the rest of the summer in ‘breaking’ the prairie in preparation for a wheat crop, and in cutting and making some prairie hay for the winter provender of his live stock. . . . In the end of August he sows his wheat, and, when that is completed, he harvests his ‘sod’ corn. . . . When the crop of Indian corn is secured there is time to begin making fences. . . . The fences are made of posts and sawn pine timber, . . . the material being secured at either the nearest railway station or grove of timber.”

Solon Robinson,¹⁸ of Lake County, Indiana, in 1843 gave the cost of starting a prairie farm as follows:

“The first breaking up of the prairie is generally counted in the cost of preparation; that is \$1.50 an acre; rails, one cent each; count 16 or 18 for every rod, and calculate the expense of any sized lot that you wish. A comfortable log cabin with two rooms can be built for \$50. A farm house 1 and $\frac{1}{2}$ stories high, 20 by 30 feet, from \$250 to \$300. A log barn, 18 by 40, \$40. Of course there are several other items of expense that I cannot give exactly here, such as a well, cellar, garden fence, yards, shed, etc., that cost labor and not money.”

BUILDINGS ON PRAIRIE FARMS.

Buildings were cheaply constructed. A frequent method of building is thus described:¹⁹

“I have good, warm stabling for some forty head of cattle and sheep, that did not cost ten dollars. The sides are built with rails laid up in pens about two or three feet wide, supported of course, by cross pieces, and the space filled with old hay, straw, turfs, or small bushes with the leaves on, until the requisite height is attained, and then covered with poles, rails, and coarse hay. Any quantity of hay for covering can be had in the prairie country, for a small amount of labor. A small ditch or bank on the upper side, keeps the water from the bank inside, which, well covered with straw, makes an excellent floor. . . . And yet, how many expose their whole stock, winter after winter, by the side of a stack on the open prairies where the Northwest wind sometimes blows almost hard enough to take their hides from their backs, were it not for the natural adhesiveness between ‘skin and bone.’”

FENCES.

The question of fences was important to the prairie farmer. The first settlers of the country who took up land in or near the forests had no difficulty in securing material for wooden fences; but to the prairie farmer who had no woods, fencing to protect fields from the ranging cattle and hogs was one of the chief items of necessary expense. How to cheaply construct a sheep-

¹⁷ Caird, *Prairie Farming in America*, 67.

¹⁸ *Cultivator*, X (1843), p. 37.

¹⁹ *Ibid.*, VII (1840), p. 52.

and hog-proof fence was a leading topic of discussion in the prairie region. In the wooded regions the Virginia rail or post and board fence was common, but the early settlers in the prairie region, especially in central Illinois and eastern Iowa, where fence rails or stone could not be readily obtained, frequently resorted to sod fences. Wire fencing was coming into use by 1850, especially in Iowa, but it was much criticized on account of sagging, short life and the danger of injuring stock. The early wire fences were not hog-tight. The osage orange as a hedge was actively recommended and was planted by many. Nurseries for the propagation of the plants were established in Illinois and Iowa by speculative farmers who hoped for large returns.

SOIL EXPLOITATION.

Soil exploitation was the keynote of western agriculture. Political, religious, and other reasons brought in immigrants from abroad, but it was mainly the cheapness, accessibility and fertility of western lands that attracted the eastern farmer. The usual practice of soil exhaustion is well illustrated by an account of Missouri farming in 1849:²⁰

"Farming here is conducted on the regular skinning system. . . . There seems to be a continual struggle with each farmer to have longer strings of fence, bigger fields, and more ground in corn than his neighbor. The result of which struggle, in conjunction with the ease with which land is brought into cultivation in the prairie, convenient to timber, is that most of the farmers in this country *scratch* over a great deal of ground, but *cultivate* none. Instead, however, of endeavoring to extricate themselves from their difficulties in the most reasonable way possible, that of ceasing to enlarge their farms and growing grass seed until they are reduced to a manageable size, the cry is still more land, more corn. It is corn, corn, corn, nothing but corn. . . . Take the state over and I have no idea that one farmer out of fifty has ever hauled a load of manure to his corn fields since he has been in the state. I have doubts, even, whether one in a hundred has ever done it. . . . Some, however, have the foresight and sagacity to avoid all this by building their stables, barns, etc., over or contiguous to a ravine, by which they are drained, so that each shower abates the nuisance, and the lucky farmer is not troubled with muddy lots and rotting barns."

Such practices were not entirely the result of ignorance. European travelers in America loudly lamented and condemned the "broad acres" culture of the West. Then, as now, soil improvement was the theme of the majority of treatises on good agriculture, but it was practiced but little in the West, except by the feeding of cattle and hogs on the land. A traveler through Illinois in 1840 writes:

"Indeed the two greatest objections to the West, in my judgment, are that the land is too cheap and too productive."²¹

THE ECONOMIC BASIS OF WESTERN PREDATORY AGRICULTURE.

The prevailing opinion in Illinois regarding soil improvement was expressed in the *Prairie Farmer* in 1854:²²

"Any one who sees the agricultural papers of the Eastern States will be struck with one fact concerning them all; and *that* is, that their chief strength is expended on

²⁰ *Cultivator*, new series, VI (1849), p. 302.

²¹ *Western Farmer*, I (1840), p. 147.

²² *Prairie Farmer* (1854), p. 81.

matters which relate to *preparing the soil*. The same fact is evident in all the English Agricultural literature; every work relative to the subject, even to a book on flowers, is nearly filled with directions for composing the soil, with which the beginning is to be made. Manures, how made, how saved, how kept, how applied—phosphate, superphosphate, 'Improved' superphosphate, guano, composts, and the like, and related things, fill from one-half to nine-tenths of their pages. . . . What would they think if they had their soil to start with, instead of being obliged to make it. They would then be precisely where we are, with our soil made to our hands, ready to be stirred and receive the seed. Throughout all the Northwest, with but few exceptions, we have the soil to begin with, which these Atlantic Shore and English farmers would like to make by the aid of their manures."

"All hail the inventor," writes another western enthusiast, "they do more benefit to their fellow men than a thousand theorizers on guano." The facts were that the kind of farming that paid best in the West was exploitation of the soil. It looked like poor farming to an easterner and to a European, but it was the system most profitable to the settlers on the prairies. Land was cheap, fields were large, and the best management was the application of a minimum of labor per acre. This did not imply a minimum of work per man; often a maximum of human exertion was expended.

There were, indeed, outside the prairies, farming regions which had exceedingly productive soil, such as the wheat region of western New York, the limestone valleys of southeastern Pennsylvania, the bluegrass region of Kentucky, and the bottom lands of Ohio. But the contrast between the scant and rocky soils of New England and the level, fertile lands of the prairies was little less than the contrast between the opening of a farm in the forest and one on the prairie. The cheapness of fertile land in the West and the ease with which it could be worked made it a great attraction to the eastern farmer. The rapid expansion of western agriculture by increasing the annual production of beef, pork, cheese, and wheat made possible the development of an urban population in the East. Meanwhile, the competition of western products caused a readjustment in eastern farming.

CHAPTER XXII.—AGRICULTURAL LABOR AND POPULATION.

Closely connected with the abundant supply of land, were the problems arising out of the relative scarcity of farm labor. Abundance of land and scarcity of labor were influential in determining the methods of culture as well as the kind of crops to be grown. Scarcity of labor was in no wise peculiar to this period of our agricultural history, but during the rapid expansion of production in the prairies it became increasingly evident, in both East and West.

One cause of the growing scarcity of farm laborers was the development of manufacturing and the resulting new demand for labor. Throughout the East the high relative wages paid to mechanics was a matter of much concern to farmers who employed labor. In Rhode Island, in 1849, while farm laborers were receiving from \$12 to \$15 a month for ordinary farm work, and \$1 a day for mowing, mechanics were receiving from \$1 to \$2 a day throughout the year.¹ In Wisconsin, farm labor was quoted at \$12 a month and that of mechanics was \$20. It seemed to be generally conceded that farmers could not pay wages equivalent to those paid by manufacturers.

Emigration to the West, now increasing in volume, caused a constant drain of labor from the Eastern States. A New England farmer wrote in 1841:²

“A great proportion of our young men, on arriving at the age of manhood, push their fortunes in the West, and take their farms on the rich bottom lands of the Mississippi, and its tributaries, leaving the agricultural portions of New England, with help scarcely sufficient to cultivate their lands in the ordinary way.”

WAGES IN THE EAST AND IN THE WEST.

In the West, the lack of market, the low price of produce, and constant arrival of new settlers were conditions which tended to keep down the level of wages.

In Berkshire County, Massachusetts, in 1847, farm laborers were said to command

“ten, eleven and twelve dollars per month, through the year. In the summer months, men, from twelve to fifteen dollars. Day laborers, at haying and harvest, from one dollar to one dollar and twenty-five cents, at other farm work, from sixty-two and a half to seventy-five cents. In winter, by the month, from eight to ten dollars. By the day, fifty to sixty-two and a half cents.”³

The scarcity of labor was most severely felt during harvest time in both East and West, especially in the seasons of haying and of reaping the small grains. After the improvement of the plow a considerable area could be planted in the spring, but in 1840 reaping and mowing were still done by hand and the

¹ U. S. Patent Office, *Annual Reports*, 1849, *Agriculture*, p. 99.

² N. Y. State Agric. Soc. *Transactions*, I (1841), p. 359.

³ U. S. Patent Office, *Annual Report*, 1847, p. 361.

area which one man could crop was limited largely by his ability to harvest. Expert harvest hands, especially cradlers, demanded high wages. In New York State, in 1852, the average mower, it was estimated, received from 75 cents to \$1 a day, for cutting about 1¼ acres.⁴ An average cradler would cut about 2 acres of wheat a day.⁵ In the older and more thickly settled region of the Eastern States the demand for labor was more uniform throughout the year than in the West. Dairying and livestock farming were more commonly followed, with a diversified field system. During the winter months, lumbering, teaming, and other pursuits took up the farmers' time. But even in the East it was a difficult task to secure sufficient help for harvest.

A large portion of the farm labor was furnished by the family. The making of butter and cheese involved much labor, which usually fell to the women.

TABLE 32.—Wages of agricultural labor.^a

State.	Year.	Wages.			Value of board per week.
		By the year.	By the month.	By the day.	
Wisconsin	1847	.....	\$12	\$1.00 to 1.50	.....
Indiana	1849	.....	10 to 13	.....	.....
Michigan	1849	\$50 to 120	.....	.70 to .90	\$1.00 to 1.50
Ohio	1848	.....	9½ to 13	.....	.....
Do.	1849	.....	10 to 11	.....	..... 1.25
New York	1849	{ 150	10 to 14	.75 to 1.25	.....
		{ 100	10 to 15	.75 to 1.50	..... 1.25
Rhode Island	1849	.....	12 to 15	..... 1.00	.....
Massachusetts	1847	{ 8 to 15	8 to 15	.62½ to 1.25	.....
		{ 120 to 144	10 to 16	.....	.....
Vermont	1849	.....	15	..... .75	1.50 to 2.00
Delaware	1847	{ 5 to 7	5 to 7	.....	.....
		{ 8 to 12	8 to 12	1.00 to 1.50	1.62½ to 1.87½

^a Compiled from U. S. Patent Office, *Annual Reports*, 1845, p. 1149; 1848, p. 686, and from reports of State boards of agriculture and State agricultural societies.

Not infrequently women milked the cows, and in the West they usually assisted in the field during the rush of harvest season. During the summer season the extra demand for labor was partially supplied by utilizing more fully the labor of the boys on the farm. One of the great benefits anticipated from the introduction of agricultural machinery was the more complete utilization of boy labor, for it was thought that the work which formerly required strong men could then be done by means of machinery and boys.

SCARCITY OF LABOR ON PRAIRIE FARMS.

With the spread of farming into the prairies the severity of the problem of harvesting was greatly aggravated. So long as land had to be cleared of trees and underbrush before it could be cultivated, the acreage of arable land was limited by the supply of men to make the clearing, but when the progress of settlement reached the prairies the supply of arable land became at once abundant, and in proportion the men to sow and harvest were scarce. In

⁴ N. Y. State Agric. Soc. *Transactions*, XII (1852), p. 108.

⁵ *Ibid.*, 115.

the wheat-growing regions of the West the scarcity of labor for harvest was strongly felt. Great as were the advantages of the cradle over the sickle, the cradle was still entirely inadequate. A writer of southern Michigan described the condition in that region in 1839: ⁶

“Some idea may be formed of the extent of the crop, when I state that on Pigeon Prairie, on one area of twelve thousand acres, eight thousand at least is in wheat. On Prairie Round, with an area of twenty thousand acres, at least thirteen thousand is in wheat. On the elevation of the Prairie Round, you can behold the vast plain of twelve thousand acres, all waving in golden color, ripe for the cradle. . . . At this moment every man and boy, and even women are actively engaged in cradling, raking, binding and shocking the golden harvest. I have seen hundreds of women near their log cabins assisting in the active duties of the field. But, after all, a large portion will be left out, and be destroyed. There is not *help* enough in the country to secure the crop.”

Many acres of grain were annually lost in the large western wheat fields because of inability to harvest in time.

CAUSES OF INCREASING SCARCITY OF LABOR, 1850 to 1860.

During the fifties the scarcity of agricultural labor came more into prominence. In the West, the Mexican War had withdrawn a considerable number from the ranks of agricultural laborers; in the East, manufacturing cities were attracting an increased number of laborers from the rural regions. The gold discoveries in California of 1849 attracted many others. Especially large was the demand made by the railroads for men in the construction of the new lines, which were being rapidly extended through the western region. It was estimated in 1857 that the railroads, for construction and operation, had withdrawn 400,000 able-bodied men from other employment.⁷

A Michigan farmer thus describes the condition in his community as typical of much of the surrounding wheat-growing territory: ⁸

“Our school district embraces about three thousand acres of land; the majority of farms are eighty-acre lots; four lots, only, are unsettled; there are twenty-seven families in the district; three men are mechanics, who follow their professions, and owning, together, ten acres of land; there are not more than six or eight boys in the district who are old enough to manage a team; five men have left the district for the gold diggings this season; four of them left farms to be managed as they best could be; the improvements on the farms will range from twenty-five to one hundred acres of arable land. There is but one man in the whole district who works at day's work, and he is accidentally here for a short time.”

The high price of wheat which prevailed from 1854 to 1857, and the rapid extension of railroads and markets into the prairies, led to a great increase in the area of land under cultivation. It was comparatively easy to secure a farm, when the price of a day's labor would buy an acre of land. Many eastern farm laborers, who could command the means, migrated to the “West” to cultivate farms of their own.

⁶ *Western Farmer*, I (1840), p. 60.

⁷ *Hunt's Merchant's Magazine*, XXXVII, 365.

⁸ U. S. Patent Office, *Annual Reports*, 1852, *Agriculture*, 278

WAGES IN 1857.

The wages of farm labor in Ohio showed a significant advance between 1848 and 1857. In 1857 wages were commonly estimated at from \$150 to \$200 a year. The wages of a mower ranged from \$1 to \$1.50 a day, of a cradler from \$1.50 to \$2. Rakers and binders usually received a little more than mowers, but a little less than cradlers. Owing to the increasing wages of labor and the constant improvement of agricultural machinery, the relative merits of man and horse power were popular subjects of discussion during the two decades. The development of commercial agriculture and the use of agricultural machinery, particularly the reaper, the mower, and the corn cultivator, were causing greater economy in the use of labor on the farm.

THE WESTWARD MOVEMENT OF POPULATION.

The distribution of free population in 1840, 1850 and 1860 is shown in figures 33, 34, and 35. In addition, there were in 1860, 225,000 slaves in

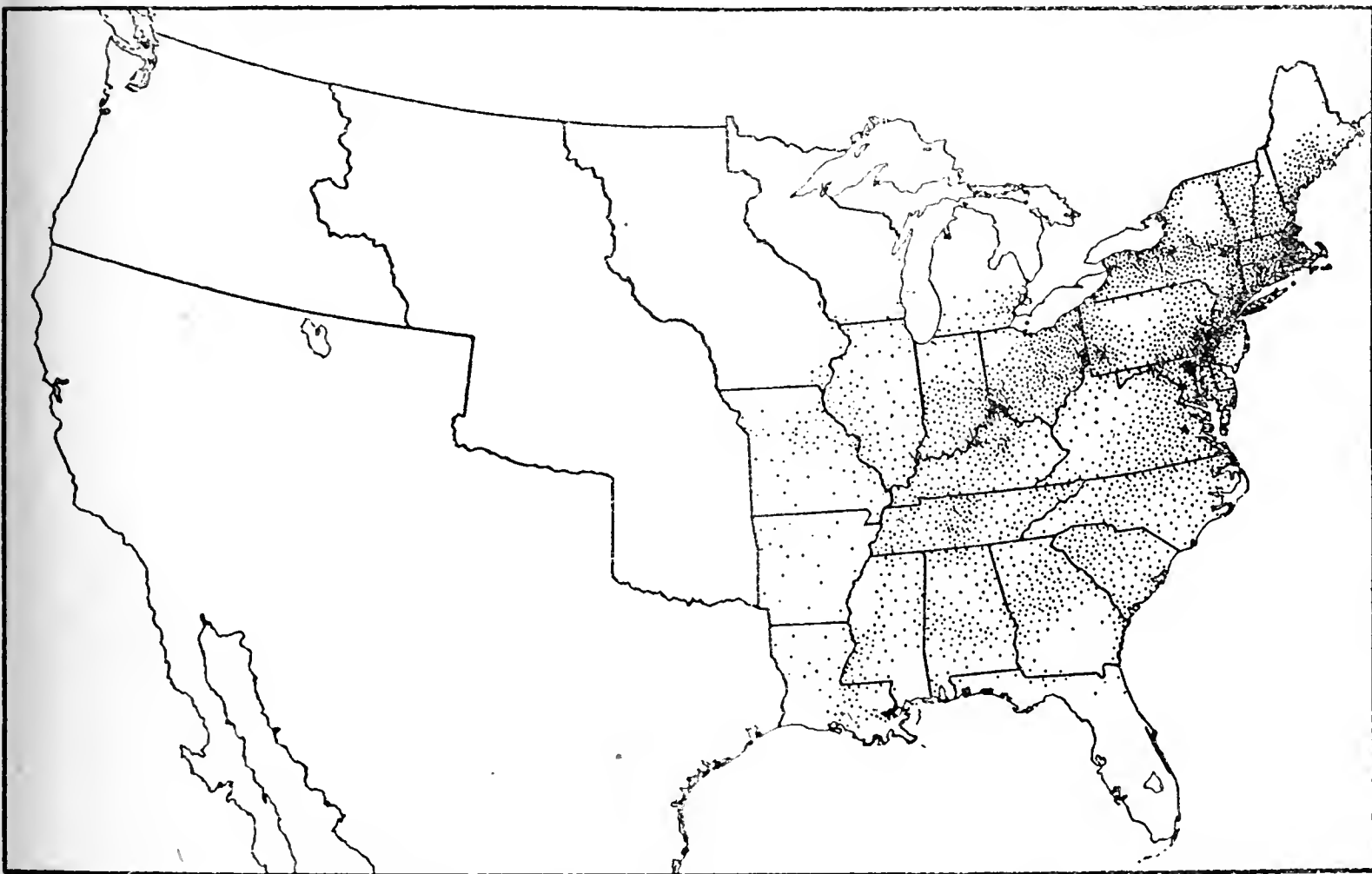


FIG. 33.—Free population, 1840. Each dot represents 5000.

Kentucky; 115,000 in Missouri; 87,000 in Maryland, and 1,800 in Delaware. The rapid expansion westward into the prairie region of the Northwest is apparent. The business reverses during the depression which followed the panic of 1837 induced many to leave the East to make their homes in the West.⁹ The Mexican War and the discovery of gold in California attracted the attention of many to the West. During the rapid extension of railroads and the high prices that characterized the middle fifties, it seemed as though everyone was going, or at least looking, toward the West. "Yankees" were

⁹ N. Y. State Agric. Soc. *Transactions*, II (1842), p. 48.

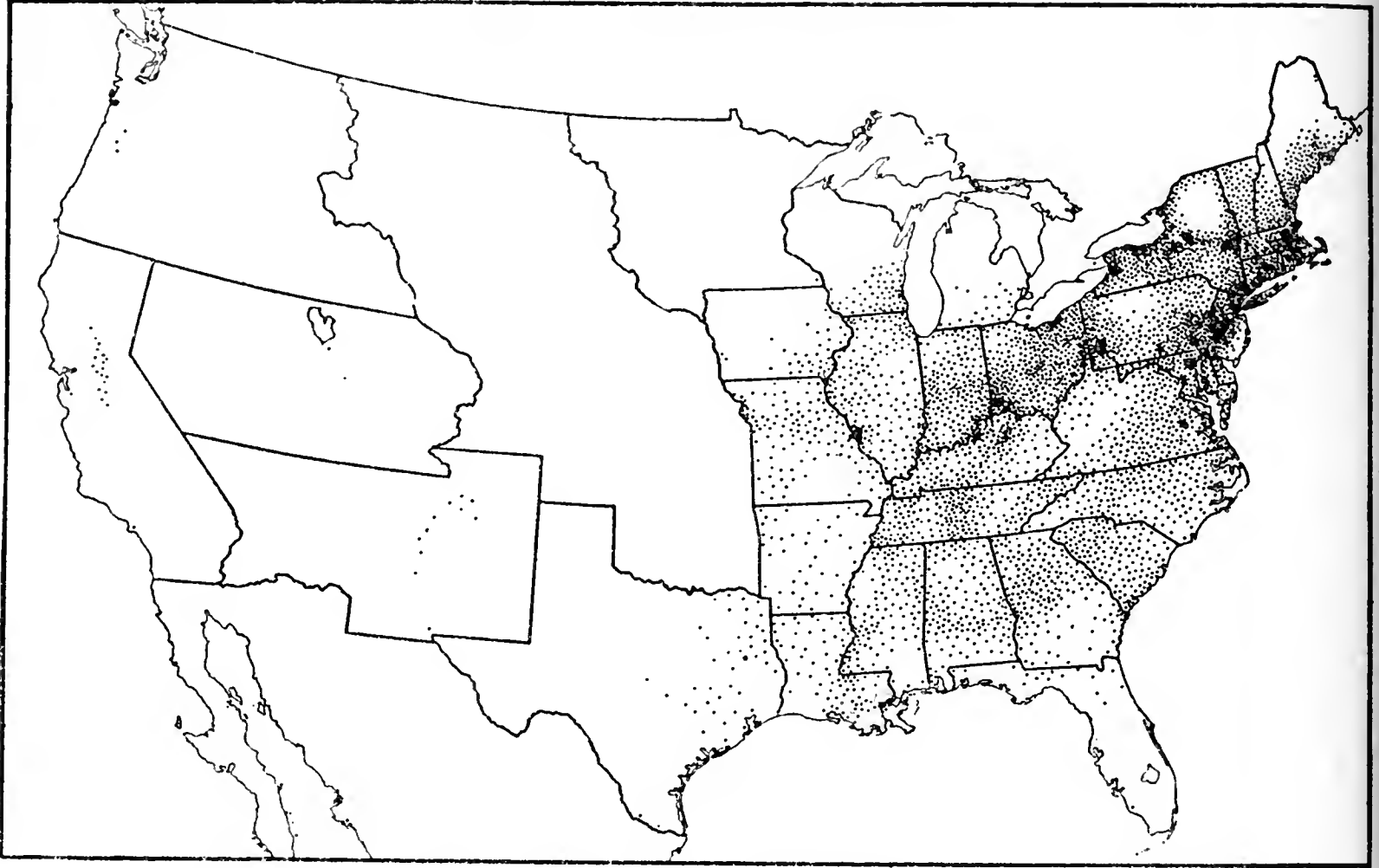


FIG. 34.—Free population, 1850. Each dot represents 5000.

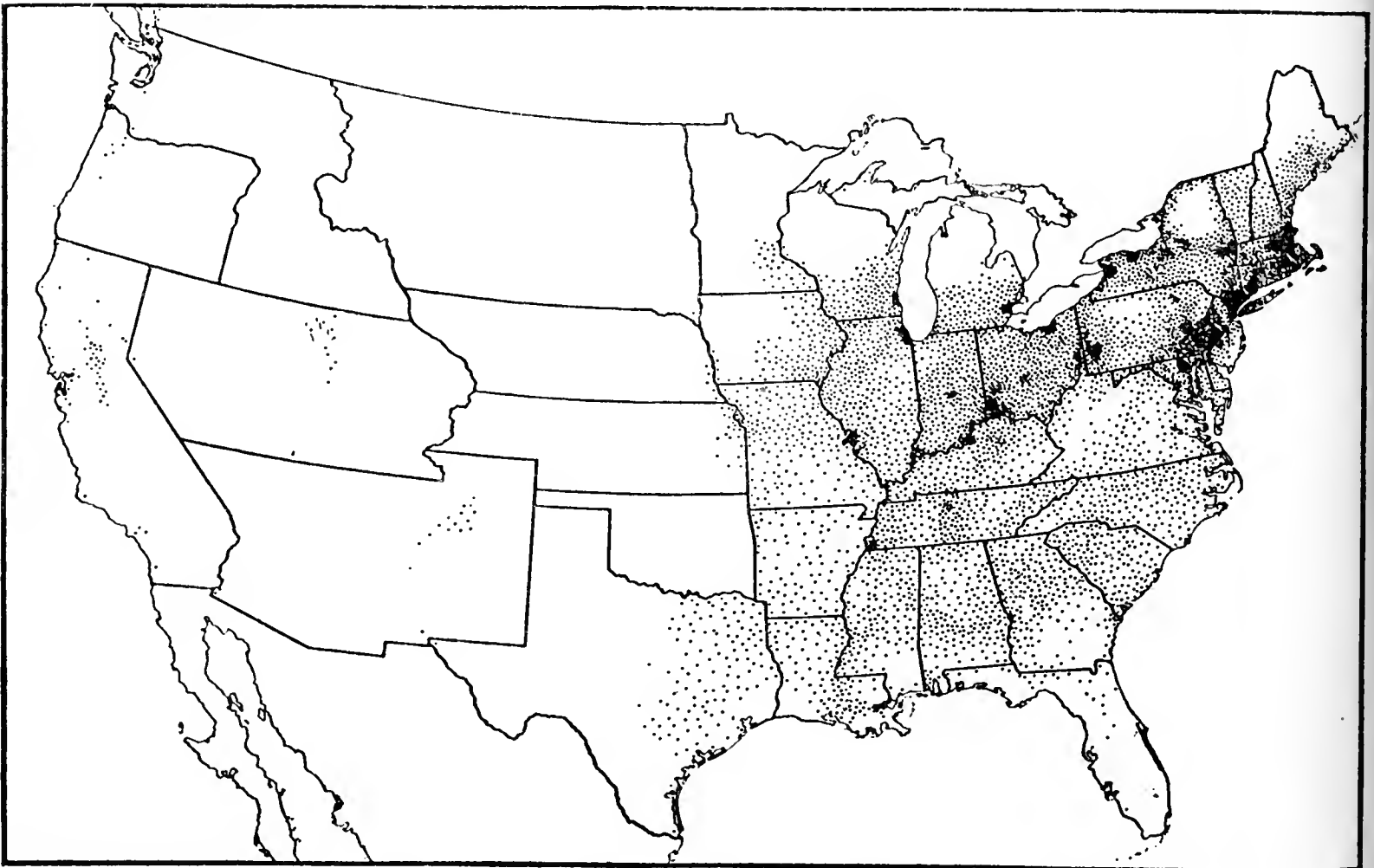


FIG. 35.—Free population, 1860. Each dot represents 5000.

TABLE 33.—Growth of population in the north, 1840 to 1860.

Division and State.	1840.		1850.		1860.	
	Popula- tion.	Density per square mile.	Popula- tion.	Density per square mile.	Popula- tion.	Density per square mile.
	<i>Thousands.</i>	<i>No.</i>	<i>Thousands.</i>	<i>No.</i>	<i>Thousands.</i>	<i>No.</i>
United States	17,069	9.7	23,192	7.9	31,443	10.6
Geographic Division:						
New England.....	2,235	36.1	2,728	44.0	3,135	50.6
Middle Atlantic ..	4,526	45.2	5,899	59.0	7,459	74.6
East North Central	2,925	10.7	4,523	18.4	6,927	28.2
West North Central	427	1.6	880	3.1	^a 2,165	5.3
Mountain .....	....	....	73	.2	175	.3
Pacific .....	....	....	106	.2	444	1.0
New England:						
Maine	502	16.8	583	19.5	628	21.0
New Hampshire ..	284	31.5	318	35.2	326	36.1
Vermont	292	32.0	314	34.4	315	34.5
Massachusetts	738	91.7	994	123.7	1,231	153.1
Rhode Island	109	102.0	148	138.3	175	163.7
Connecticut	310	64.3	371	76.9	460	95.5
Middle Atlantic:						
New York	2,429	51.0	3,097	65.0	3,881	81.4
New Jersey	373	49.7	490	65.2	672	89.4
Pennsylvania	1,724	38.5	2,312	51.6	2,906	64.8
East North Central:						
Ohio	1,520	37.3	1,980	48.6	2,340	57.4
Indiana	686	19.1	988	27.5	1,350	37.6
Illinois	476	8.5	852	15.2	1,712	30.6
Michigan	212	3.7	398	6.9	749	13.0
Wisconsin	31	0.4	305	5.5	776	14.0
West North Central:						
Minnesota .....	....	....	6	....	172	2.1
Iowa	43	0.2	192	3.5	675	12.1
Missouri	384	5.6	682	9.9	1,182	17.2
North Dakota .....	....	....	....	....	^b	....
South Dakota .....	....	....	....	....	^b	....
Nebraska .....	....	....	....	....	29	0.2
Kansas .....	....	....	....	....	107	1.3
Mountain:						
Montana .....	....	....	....	....	....	....
Idaho .....	....	....	....	....	....	....
Wyoming .....	....	....	....	....	....	....
Colorado .....	....	....	....	....	34	0.3
New Mexico .....	....	....	62	0.3	94	0.4
Arizona .....	....	....	....	....	....	....
Utah .....	....	....	11	....	40	0.3
Nevada .....	....	....	....	....	17	0.1
Pacific:						
Washington .....	....	....	....	....	12	0.1
Oregon .....	....	....	13	....	52	0.5
California .....	....	....	93	0.6	380	2.4

^a Does not include Dakota Territory.

^b Dakota Territory, 4,837.

TABLE 34.—Immigration 1830-1860.

1830-40	599,125
1840-50	1,713,250
1850-60	2,598,214

said to be leaving New England in "shoals," seeking land in the West—a piece of prairie and woodland in Illinois, Wisconsin, or Iowa. It was during this period that foreign immigration became an important element in the settlement of the West. Economic, political, and religious disturbances in western Europe were sending an increased flood of immigrants to this country, many of whom went directly to the West. After 1844, immigration from Germany and Norway rapidly increased, and from Ireland after the potato famine in 1846. While many forces were operating to encourage a movement of population, the direction of the movement and the destination of the immigrants was determined by the presence in the northern Mississippi Valley of vast areas of cheap but fertile prairie lands made easily accessible by new means of transportation.

In 1840, the States and Territories of Ohio, Indiana, Illinois, Michigan, Missouri, Wisconsin, and Iowa had a population of 3,350,000, of which more than 2,000,000 were in Ohio and Indiana alone. In 1850, the same States, with Minnesota included, had 5,400,000 people, an increase of over 60 per cent in 10 years. In 1860, with Kansas, Nebraska, and Dakota added, the number was over 9,000,000, an increase of 68 per cent since 1850. In 1860, the far West had 600,000 people, two-thirds of whom lived in California. (See Table 33.)

CHAPTER XXIII.—AGRICULTURAL MACHINERY.

The scarcity of labor and the expansion of agricultural production into the prairie region stimulated the rapid development and introduction of improved agricultural machinery. The improvement along these lines which had been made before 1840 was summarized by Judge Buel,¹ who wrote:

“The disparity between old and new implements of culture is great, not only in the time employed, but in the manner in which they do their work, and in the power required to perform it. The old plough required a four-cattle team, and two hands, to manage it, and the work ordinarily was but half executed. The improved plough is generally propelled by two cattle, requires but one man to manage it, and, when properly governed, performs thorough work. Harrows and other implements have undergone a like movement. Besides, new implements, which greatly economize the labor of tillage, are coming into use, as the roller, cultivator, drill-barrow, etc., so that a farm may now be worked with half the expense of labor that it was wont to be worked forty years ago, and may be better worked withal.”

Whatever the degree of development in agricultural machinery prior to 1840, however, it was only a beginning when compared with the improvement and the general adoption of new machinery which took place during the next two decades.

In 1840, grain was generally reaped with the cradle, which had come into use about 1820, but the sickle had not been entirely abandoned. Hussey and McCormick had patented their reaping machines (see figs. 41, 42, 43), but as yet their actual use was negligible. Stationary and movable threshing machines, consisting of a simple cylinder and concave and driven by horse power, had been widely adopted, although a considerable amount of grain (especially in the West) was still trodden out by horses and cattle or beaten out with the flail. The winnowing was done in a fan-mill turned by hand, but many in the West possessed not even a fanning-mill. The grain drill was scarcely known.² Hay was cut with the scythe; the mowing machine, however, had been invented and tried. The wooden horse-rake, said to be able to do the work of 6 men, had been widely introduced. The cast-iron plow (fig. 36) had superseded the old wooden-moldboard plow. The Roman harrow and the roller were commonly used. Corn was planted by hand and cultivated with the plow or, in the East, with a crude and more or less unsatisfactory cultivator. Clover-hullers, fodder-cutters, hand-seeders, and small tools were being rapidly improved. As early as 1820, factory-made scythes were selling at from \$12 to \$18 a dozen. In 1831, steel hoes were made in Pittsburg for about \$4.50 a dozen, or one-half the price of iron hoes 10 years before. Shovels were made and sold at one-third their former price.³ Farm machinery was still largely the product of the farm or local blacksmith shop.

¹ *The Farmers' Companion* (ed. of 1839), p. 123.

² *Cultivator*, new series, VIII (1851), p. 72.

³ *U. S. Census of 1860, Agriculture*, p. xxiv.

The improvement and introduction of agricultural machinery during this period was not confined to America. In England many important new machines had been invented and were in use. American agricultural books and periodicals of the time abounded with pictures and accounts of English machinery and frequently advocated its use in America. But in England labor was plentiful and land scarce; in America land was plentiful, and the opportunities for labor were many. As in most new countries, the cost of manual labor was high in comparison with the price of land and its products; hence in America the necessity for using labor-saving contrivances was greater than in older countries. The large area of productive land, together with high-priced labor, gave incentive and direction to the development of American machinery. Cheapness, simplicity and efficiency in covering a large area were the qualities sought for. Since farmers had taken little pains to remove stones and stumps or to level inequalities in their meadows and grain fields for the better working of machinery, it became incumbent on the inventors to produce implements that would work almost anywhere.

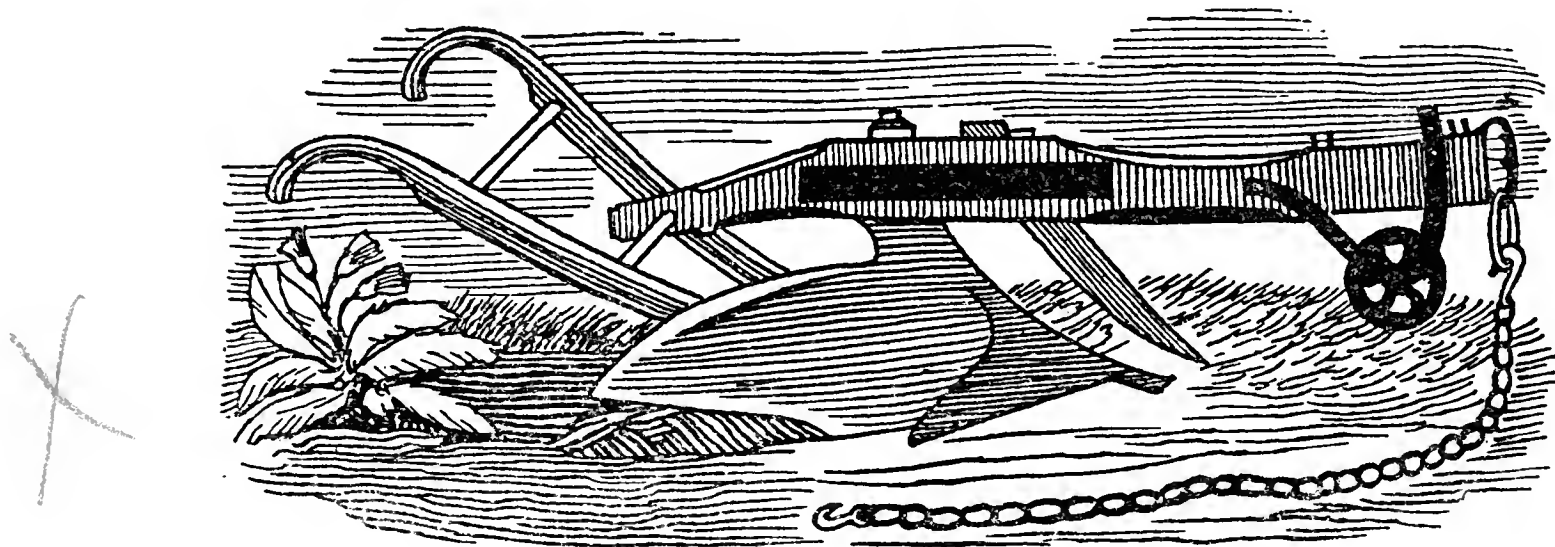


FIG. 36.—Prouty and Mear's plow.

The factory plow, as distinguished from the plow made in the blacksmith shop, was coming into use in 1840.

THE IMPROVEMENT OF THE PLOW.

A notable event in the introduction of improved agricultural machinery was the substitution of the cast-iron plow for the old wooden-moldboard plow which had been commonly used up to about 1825. (See fig. 3, p. 124.) The excessive friction of these old-fashioned plows had been a leading objection to their use. They were constructed awkwardly enough in the first place, but the form of the moldboard was especially defective. An acre was considered a good day's work. The transition from the wooden-moldboard to the cast-iron plow was practically completed by 1840. It was said in 1845⁴ that with a cast-iron plow,

“on the same farms, the same fields, with a tougher sward, are now plowed with one yoke of oxen, and often with only one man. . . . An acre and a half is plowed in a day in a manner greatly superior to the former mode.”

There was a great variety in the pattern of plows in use in the East in 1840. Each pattern had its advocates, and each one in its turn was promoted

⁴ *Cultivator*, new series, II (1845), p. 44.

by its admirers as the best. At the New York State Fair in 1842 "more than forty plows of different designs were offered for the inspection of the committee."⁵ The "Livingston County" plow, the "Montgomery County" plow, the "Wyoming," and the "Geneva" were popular in New York State in 1840. The plow was being adapted to various conditions and uses; special plows were being produced for sod-land, for stubble-land, for clay lands, and for sandy lands. Aside from variations in the curvature of the moldboard, the merits of various types of coulters and of the addition of a wheel to the forward end of the plowbeam were popular subjects for discussion in 1840. Experiments were made in western New York with gang-plows with which to stir the wheat-fallow, or to cover wheat or pea-seed to a greater depth than possible with the cultivator.⁶ In Maryland, Kentucky, and other southern States the bar-share plow was in common use. With increased attention to intensive culture, subsoil plows were coming into use in the eastern states. Plow-making had begun to leave the hands of the local blacksmith and was becoming a factory industry.

THE INTRODUCTION OF STEEL PLOWS.

The cast-iron plow, which met with such good success in the Eastern States, failed to give satisfaction on the prairies and bottom lands of the West. They "ran heavy" because they could not be made to scour properly in the prairie soils. For breaking the prairie sod, the most satisfactory plow in 1840 was an immense affair with wooden moldboard and iron share. (See fig. 37.) The moldboard was usually covered with strips of iron to lessen the friction as much as possible. Two small wheels, connected by a short axle and frequently made from a piece of plank, supported the front end of the beam and governed the depth as well as the width of the furrow. From 5 to 6 yoke of good oxen were required to operate a plow of this kind, with only a single man or a boy to drive.

"Fancy, then, a plow share weighing 125 lbs., the beam fourteen feet long, attached to a pair of cart wheels, to the tongue of which are hitched from three to seven yoke of oxen, turning an unbroken sod, eighteen to twenty-six inches wide, and sometimes a mile in length. . . ."⁷

The steel plow (see fig. 38) which would scour in the prairie soil was, however, coming into use. John Deere had made his first steel plow from a saw blade in 1837 and within a few years his plows had become celebrated in all the Rock River locality and for a considerable distance up and down the Mississippi.⁸ Steel plows were introduced into Kentucky in 1845.⁹ By 1850 they had been found to be a great improvement over the old cast-iron plow on the bottom lands of Ohio and had become widely used in the prairie regions. At the same time the rod plow (fig. 39) and other improved breaking plows were rapidly supplanting the old strap plow for breaking the prairies.

During the late fifties several attempts were made to plough by steam power. In 1858 the Illinois Central Railroad Company endeavored to promote

⁵ N. Y. State Agric. Soc. *Transactions*, II (1842), p. 4.

⁶ *Ibid.*, III (1843), p. 62.

⁷ *Cultivator*, VII (1840), p. 33.

⁸ *Prairie Farmer*, XI (1851), p. 130.

⁹ *Ibid.*, VI (1846), p. 42.

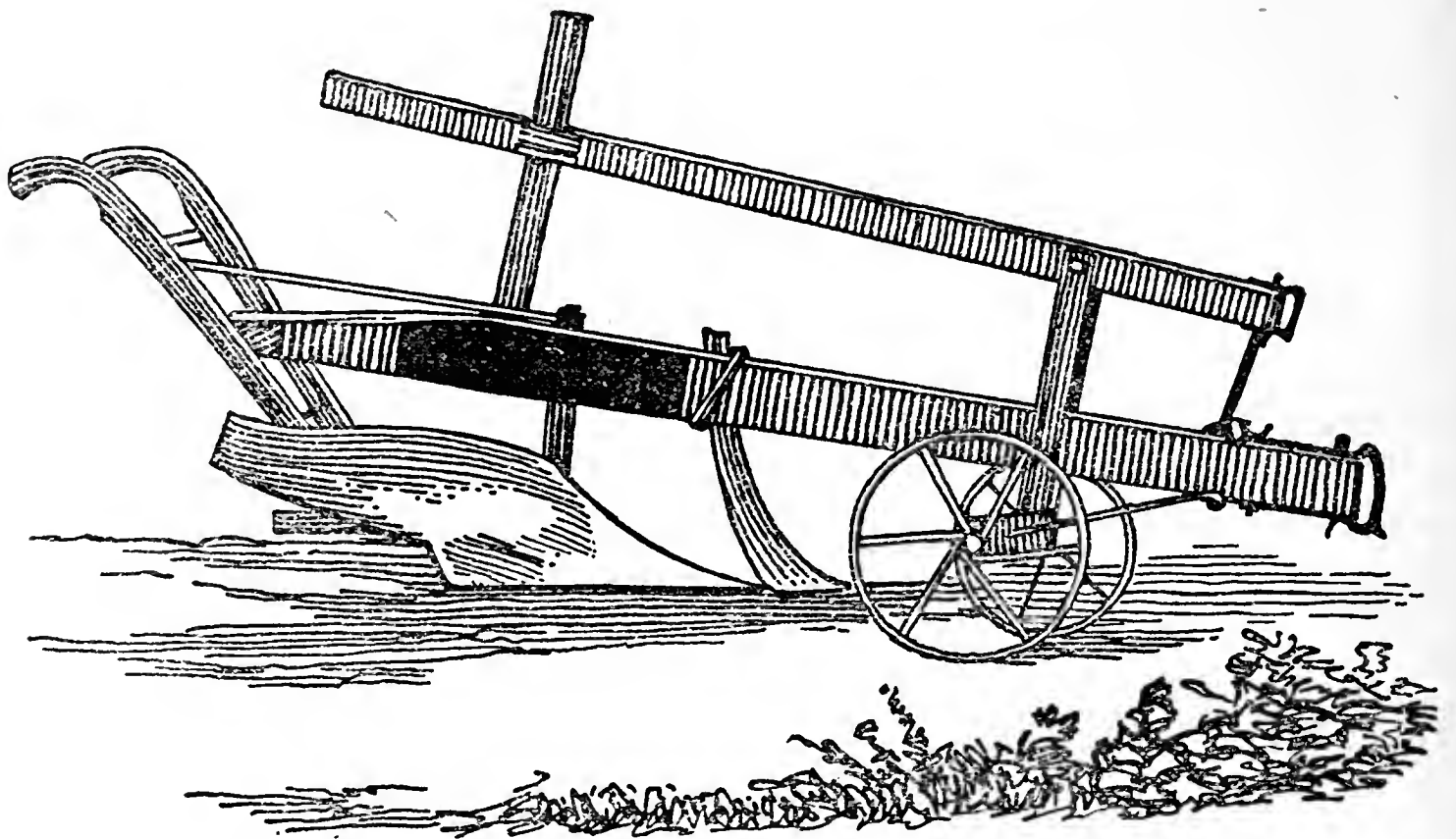


FIG. 37.—Prairie breaking plow.

In the early days the virgin prairie sod was broken with large plows with wooden moldboards plated with iron strips which turned furrows as wide as thirty inches. It was said to be one of the most picturesque sights of the West to see one of these immense plows drawn by oxen moving across the prairie. "Two old and well trained yokes, one to lead and the other at the plow, with four or five pair of young cattle in the middle" were said to constitute the most efficient team. The self-holding arrangement saved the time and expense of one man in breaking, the trucks regulating the depth as well as the width of furrow. The share was frequently made separate to facilitate removal for sharpening.

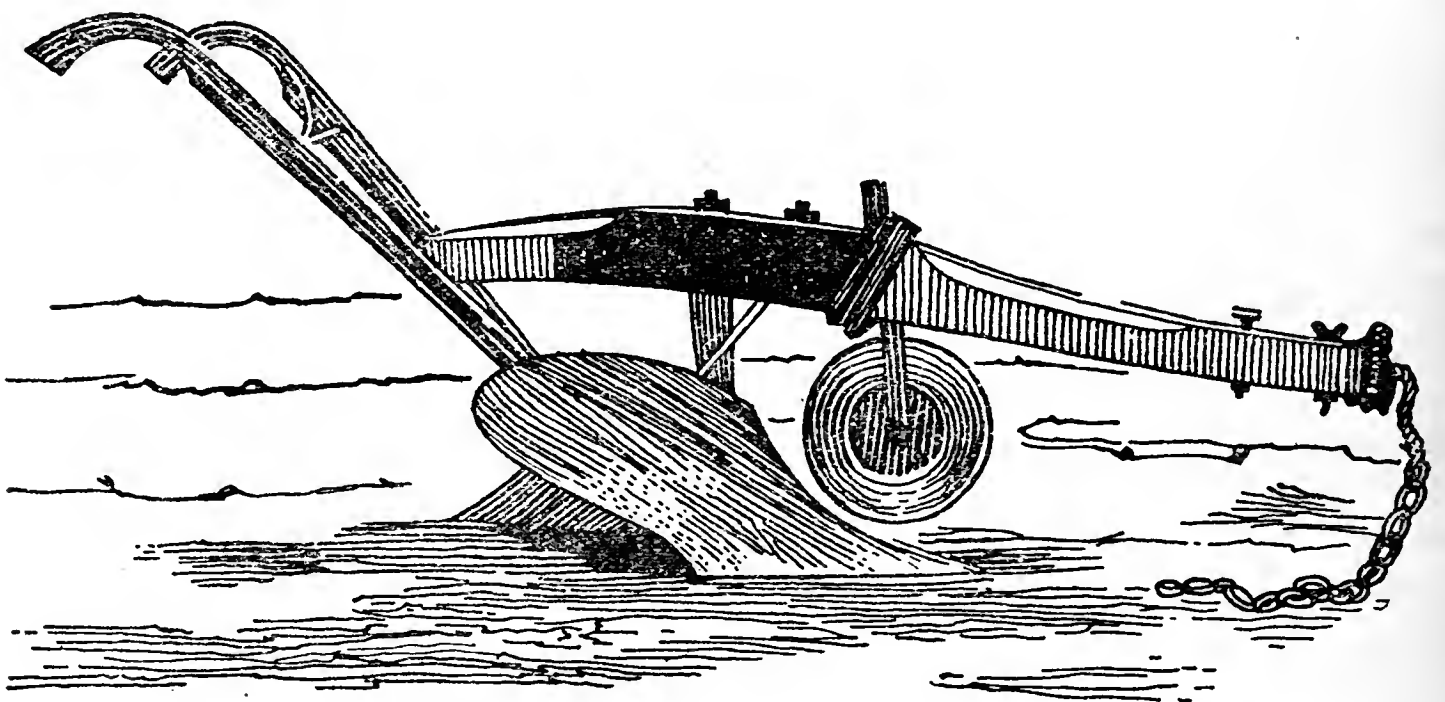


FIG. 38.—Steel plow. Improved clipper.

The cast-iron plows so generally in use in the eastern states proved unsatisfactory on the prairies as they would not scour. The steel plows had been made and tried before 1840 and by 1845 they were coming rapidly into use in the prairie region, supplanting the cast-iron plow. The draft of the plow was thus lessened, the quality of work much improved, and the paddle which until now had been used to keep the plow clean could be dispensed with.

the cause by offering a premium of \$3,000 for the first successful steam plow.¹⁰ The trials of Fawkes' steam plow (fig. 40) from 1858 to 1860 caused considerable excitement for a time,¹¹ but the outcome proved unsatisfactory. The construction of rotary diggers and grubbers was receiving considerable attention in 1860.

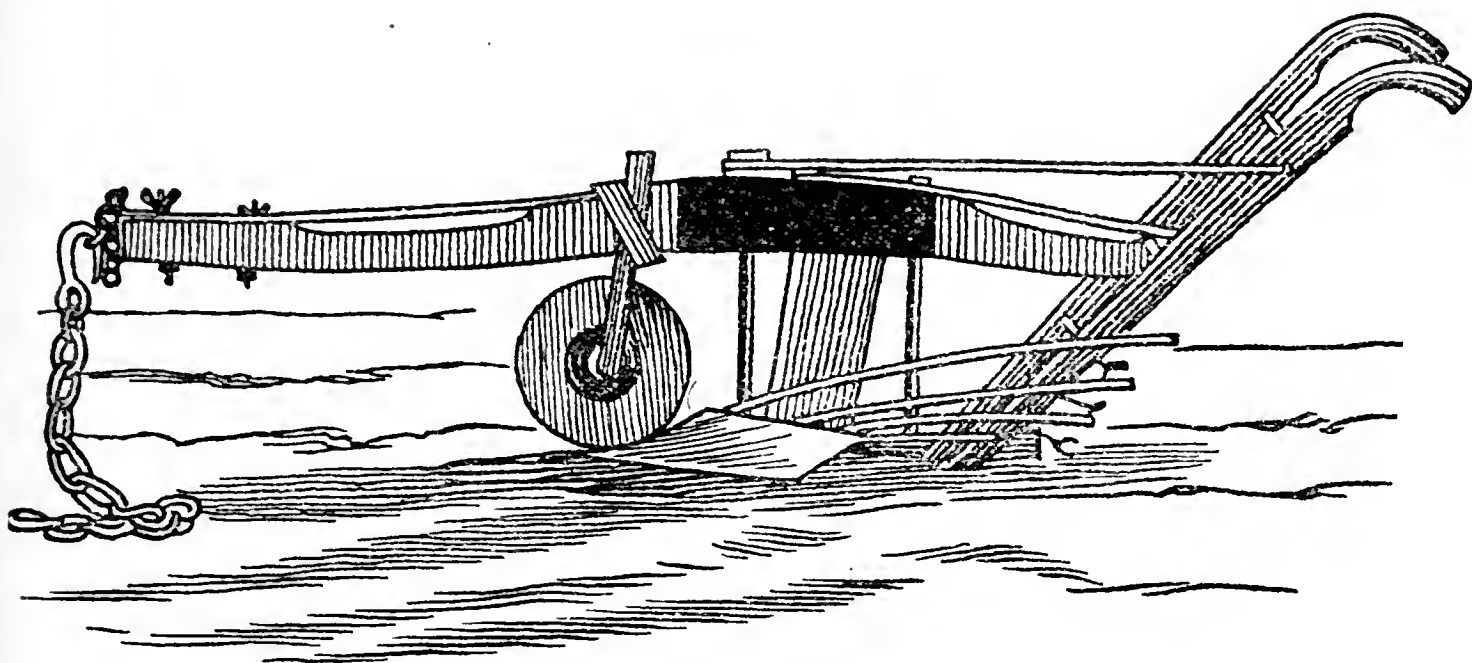


FIG. 39.—Rod plow. Two-horse rod breaker.

The rod plow came into use during this period and was widely used for breaking the prairies. The steel rods in place of a solid moldboard considerably lessened the friction.

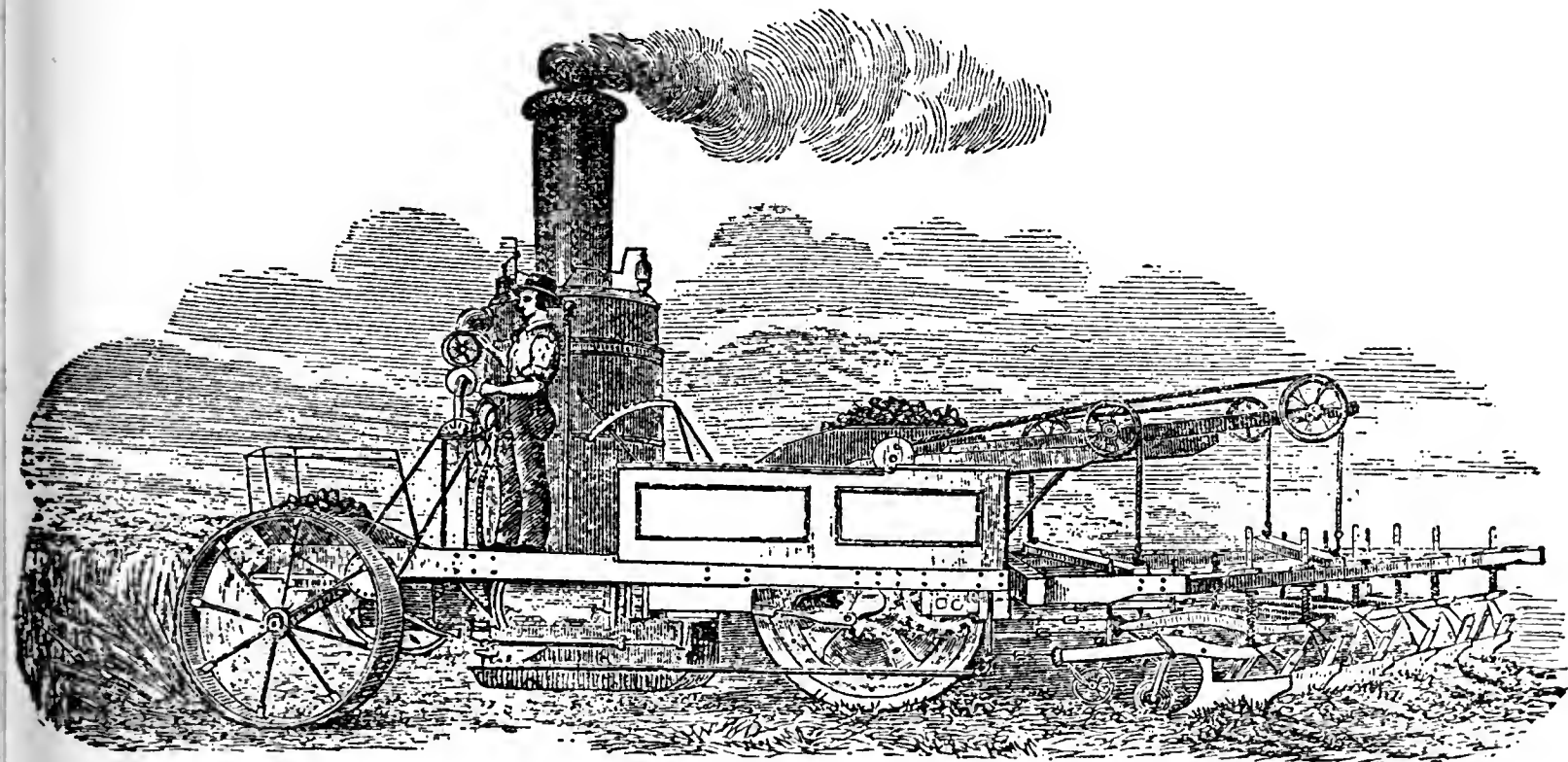


FIG. 40.—Fawkes' steam plow.

The steam plow had been invented and tried, but it was not a practical success. Fawkes' Steam Plow was awarded the premium of \$3,000 given by the Illinois Central Railroad in 1859.

Plow-making was no longer the work of the local blacksmith, but had become a factory industry. As early as 1838 a factory in Pittsburg was manufacturing a hundred plows a day by the aid of steam power. Another factory in the same city was making an average of 4,000 plows a year. "In

¹⁰ *U. S. Census of 1860, Agriculture*, p. xix.

¹¹ *Country Gentleman*, XII (1858), p. 305; XIV (1859), p. 241.

Massachusetts in 1845 there were seventy-three plow manufactories making 61,334 plows and other instruments annually." In 1855 the number of establishments had decreased to 22, making 152,686 plows annually.¹² By 1858 John Deere at Moline, Illinois, had reached an annual output of over 13,000 steel plows.¹³

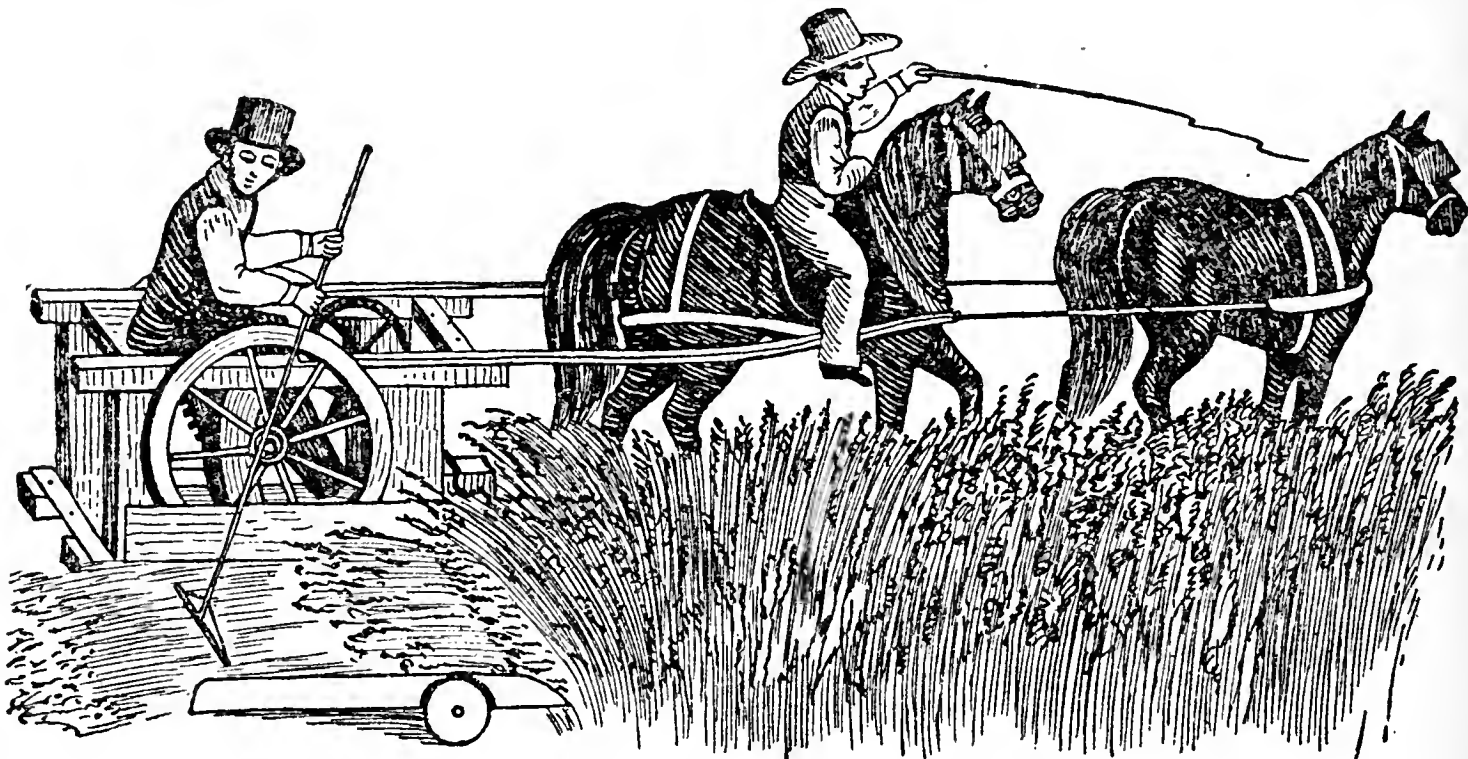


FIG. 41.—Hussey's reaper (1837).

Invented by Obed Hussey of Cincinnati in 1833, this was the most widely known reaper in 1840. The grain fell upon a platform and was raked away from it by hand. It was thus necessary to remove the grain before the succeeding round of the machine. The sickle was a notable feature. Hussey's reaper remained substantially unchanged during this period.



FIG. 42.—McCormick's reaping machine (1834).

The early McCormick machine was drawn by one horse hitched in shafts and walking beside the standing grain. The first machine was used in 1840.

¹² U. S. Commissioner of Agriculture, *Annual Report* (1872), p. 284.

¹³ *Country Gentleman*, X (1857), p. 129.

THE INVENTION OF THE REAPER.

Charles Newbold and Jethro Wood, improvers of the plow, were the names prominently connected with the development of agricultural machinery from 1820 to 1840; but from 1840 to 1860 the names of Hussey, McCormick, and Ketchum, improvers of the reaper and mower, were in the foreground. Between 1820 and 1840 the farmer had learned to use something better than the old wooden plow, and in the period from 1840 to 1860 attention was turned to the development of machinery to be used in other lines of farm work, with the result that the reaper, the threshing machine, the mower, and other implements were invented and adopted. It is significant that whereas before 1840 machinery was developed principally for the improvement of culture, after that date the fundamental movement was in the direction of labor-saving devices and increased production through extension of the area.

The development of the reaper and the mower constituted the most noteworthy achievement in the improvement of agricultural machinery during the period 1840 to 1860. Obed Hussey made his first reaper in Cincinnati and patented it in 1833 (fig. 41); the following year Cyrus H. McCormick, of Rockbridge County, Virginia, patented a reaper (fig. 42). With the appearance of these machines begins the history of successful reapers in the United States. The first public trial of the reaper was made by Hussey in a field near Cincinnati, Ohio, before the Hamilton County Agricultural Society, on July 2, 1833. A year later the Hussey machine was introduced into the States of New York and Illinois, in 1835 into Missouri, and in 1837 into Pennsylvania.¹⁴

COMPARISON OF HUSSEY'S AND McCORMICK'S INVENTIONS.

Both the Hussey and the McCormick machines as used in 1840, simply cut the grain and left it to be bound by hand. The Hussey machine was mounted on two large drive-wheels, to the right of which extended a platform with the cutting apparatus on the forward edge. The knife "consisted of a series of triangular plates riveted to a flat iron bar," one end of which was "attached to a pitman moved by a crank and receiving its motion from the main axle by means of cogs."¹⁵ In operation, the grain was allowed to fall on the platform until a sufficient amount had accumulated to make a bundle, when it was raked from the rear. The machine required two horses, a boy to drive, and a man to push off the grain. Since the grain was raked from the platform to the ground directly in the rear of the machine, it required from 5 to 7 men, according to the state of the crop, to remove the grain as fast as cut, and thus to prevent it being crushed by the horses and wheels of the machine on the succeeding round. The ordinary performance of the machine was said to be from 12 to 15 acres per day for the light model and 15 to 20 for the heavy.¹⁶

The original McCormick machine (fig. 42) was "somewhat more complicated than Hussey's," and not so substantial. "The drive wheel was situated

¹⁴ *U. S. Census of 1860, Agriculture*, p. xxi.

¹⁵ Miller, *Evolution of Reaping Machines* (U. S. Dept. of Agric., Office of Experiment Stations, Bull. 103), p. 24.

¹⁶ *Cultivator*, new series, I (1844), p. 386.

almost directly behind the horse, and through a series of cogs gave a reciprocating motion to the cutting knife. . . . Behind this [knife] was an apron or platform five or six feet long, made of thin plank, from which the grain was raked by a man walking behind and to the right of the machine. In contrast to Hussey's reaper, the grain was raked from the side of the platform, thus avoiding the necessity of removing the grain before the next round of the machine.¹⁷

Up to 1840, the reaper had hardly succeeded in establishing itself with the farmer as a practical machine. Grain was still reaped with the cradle. McCormick had not as yet sold a single machine. Hussey had begun the manufacture of his reaper at Baltimore only two years previously. Several public trials had been held, but as yet comparatively few reapers were in use, and those mostly in the East. The early machines were roughly built and had a heavy side draught. Often the horses had to be driven at a trot before the machine would cut. Where the grain was lodged they failed to cut and many complaints were also made of breaking parts. But in 1845 the Hussey and McCormick machines were coming into use in the East. It was said in Virginia that probably not less than \$15,000 was spent for reapers during the summer of 1846.¹⁸ From New Castle County, Delaware, during the same year, it was reported that the seed sown by Sawdon & Pennock's drill would be generally reaped by Hussey's and McCormick's reaping-machines.¹⁹ The editor of the *Cultivator* writes²⁰ in 1848, "They [reapers] will, undoubtedly, be still further simplified and improved, and we confidently anticipate their being brought into extensive use on smooth lands, in the course of a few years." The following year it was reported that, "labor-saving implements are beginning to be used pretty generally." Among those mentioned with high approval was Hussey's reaper.²¹

IMPROVEMENTS IN THE REAPER.

Improvements, however, were constantly being made, and new machines were coming into the market. The Hussey machine was improved in 1847. The McCormick patents of 1845 and 1847 (see fig. 43) covered many important improvements in that machine, including an improvement in the cutting apparatus and the addition of a raker's seat. It was after the adoption of these improvements that McCormick's reaper began to come into successful use.²² In 1844 he sold 50 machines, in the 2 years following 240 were sold. It is said that McCormick then took a trip through the West, where he saw the broad prairies and wheat fields of Ohio, Illinois, Wisconsin, and Missouri. It was here, he decided, that the reaper was needed. In 1847 he left the East and built his factory in Chicago. By 1851 he was making 1,000 machines a year.

¹⁷ Miller, *Evolution of Reaping Machines* (U. S. Dept. of Agric., Office of Experiment Stations, Bull. 103), p. 24.

¹⁸ *American Farmer*, new series, II (1846), p. 79.

¹⁹ *Ibid.*, 84.

²⁰ *Cultivator*, new series, V (1848), p. 330.

²¹ U. S. Patent Office, *Annual Reports, Agriculture*, 1849, p. 107.

²² Greeno, *Obed Hussey*, p. 97.

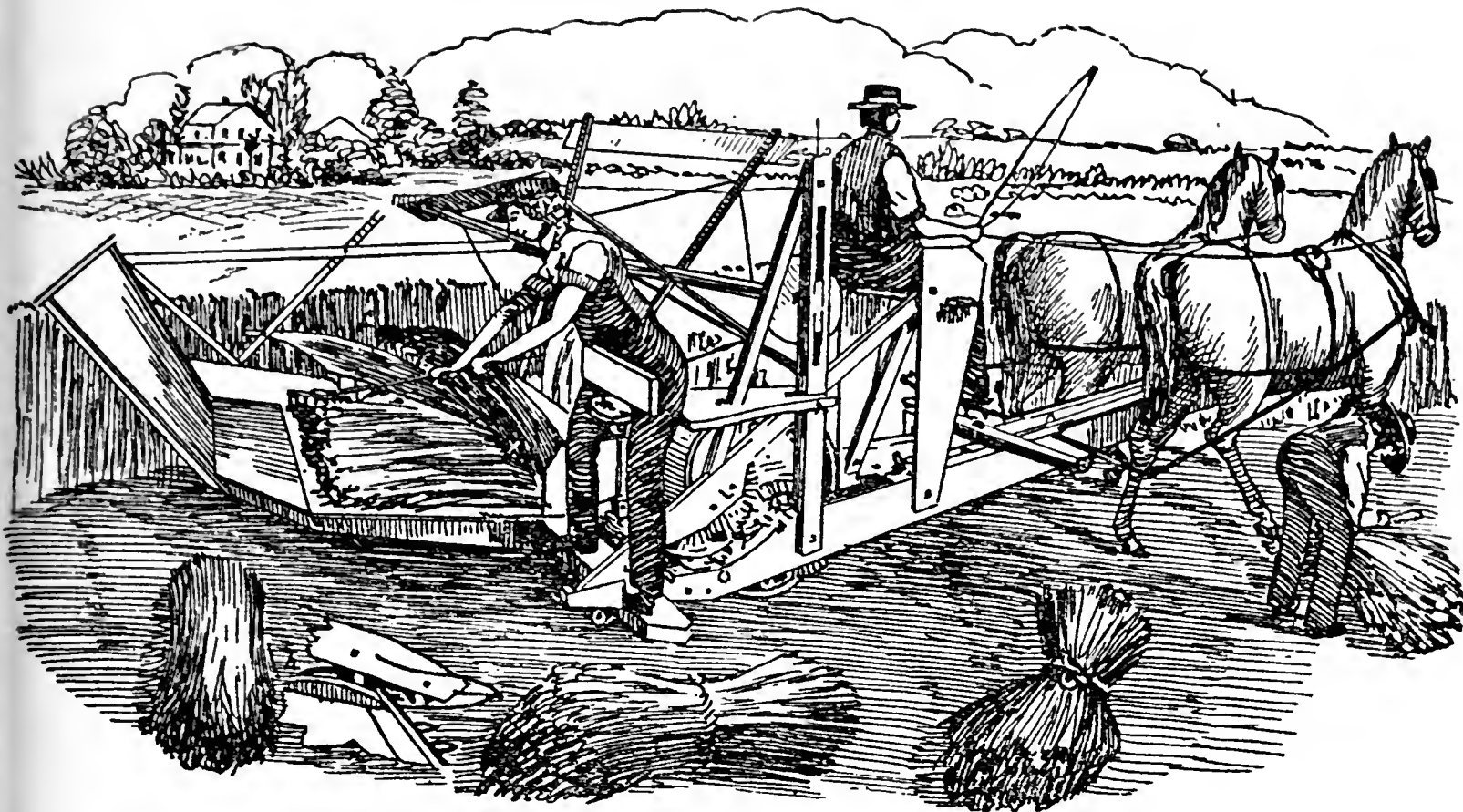


FIG. 43.—McCormick's reaping machine (1848).

With the patents of 1845 to 1847 the McCormick reaping machine was much improved and after that date it came rapidly into use. With the McCormick machine the grain was raked from the side of the platform, thus avoiding the necessity of binding before the succeeding round of the machine. With Hussey's or McCormick's reaper two men could reap ten acres per day.

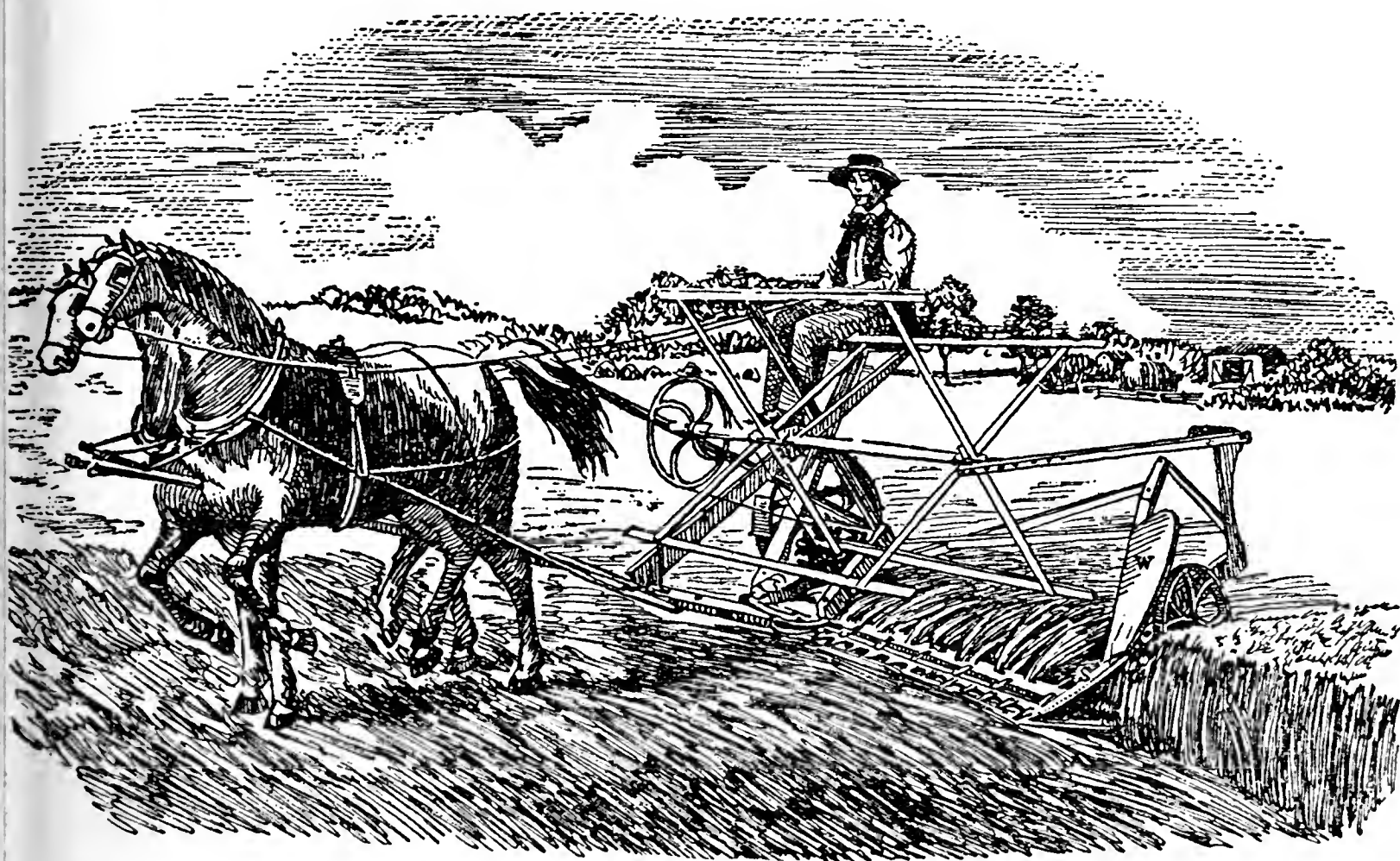


FIG. 44.—Manny's reaper and mower (as a reaper).

The majority of the reapers of this period were combined machines used both as reapers and as mowers. At the Geneva trial in 1852 the Manny machine in competition with eleven other machines won the first premium as a mower and the second premium as a reaper.

Before 1846-47 there were but few reapers in the West, but the rise in price of wheat which occurred about that date, gave new incentive to obtain them. Moreover, they had been much improved and were now manufactured in the West.

USE OF REAPERS IN THE WEST, 1850.

The rapid introduction of reapers in the West about 1850 is shown by the following typical reports from wheat-growing counties in Ohio, Michigan and Indiana: ²³

"The reaping machine has been introduced with success."

"Reapers are in use, and much approved of."

"Hussey's and McCormick's reapers have been introduced the past season, and give satisfaction."

"The reaping machine is coming into use here, giving general satisfaction where used."

"McCormick's reaper has been used by some of our farmers during the last harvest. . . ."

"The *drill*, the *horse-reaper*, and mower are not yet introduced; too many stumps in the way yet."

In Walworth County, Wisconsin, the cradle, the reaping machine, and the harvester or heading machine were reported in common use in 1851.²⁴ The *Prairie Farmer* in 1852 estimated that "probably not less than 3,500 new reaping machines were put in use in the Northwest the past season—equal to the labor of 17,500 men."²⁵ The McCormick and Hussey machines, as used in 1851, required a crew of 4 horses and 2 men, one to drive and the other to rake the wheat from the platform. From 6 to 8 men were needed to bind the grain after the reaper. In good grain, when well driven, these machines were said to cut from 10 to 12 acres per day.

Many new types of reapers appeared on the market after 1850. Fifteen patents for reaping machines were issued from the Patent Office in the years 1850 and 1851. Said the *Prairie Farmer* in 1850:

"The only question now is that of obtaining the best implement. . . . Harvesting machines, of one sort or another, are springing up in almost every country, . . ."

A list was added of 16 reapers which were made and used in Illinois.²⁶ A correspondent from Illinois in 1850 writes: ²⁷

"I would say these machines are worked by horses, sometimes two being used, but more generally four. Some of the machines require the horse to go by the side of the standing grain, while the machine works on one side. The cutting apparatus of others is directly in front of the horses. Some drop the grain directly behind, which must be bound before the machine comes round again, while others drop it at one side, and the whole field may be cut before any of it is removed. Some require a man to rake the grain from them; others are constructed for self-raking, and one has been brought into the field the past season that does its own binding."

²³ *Ohio State Board of Agric. 3d Annual Report* (1848), p. 41; *4th Annual Report* (1849), pp. 88, 131; U. S. Patent Office, *Annual Reports*, 1851, *Agriculture*, 434; 1852, p. 274.

²⁴ U. S. Patent Office, *Annual Reports*, 1851, *Agriculture*, 460.

²⁵ *Cultivator*, new series, IX (1852), p. 31.

²⁶ *Prairie Farmer*, X (1850), p. 30.

²⁷ *Cultivator*, new series, VIII (1851), p. 41.

HEADERS AND SELF-RAKERS.

Aside from the reapers of the Hussey and McCormick type, headers attracted considerable attention in the prairie region during the latter years of the forties and the early fifties. Notable among these was the machine invented in 1844 by George Esterly, of Heart Prairie, Wisconsin (fig. 45). But in competition with reapers, the headers failed to gain a place in the prairie region, owing to their relatively high cost and to imperfect workman-

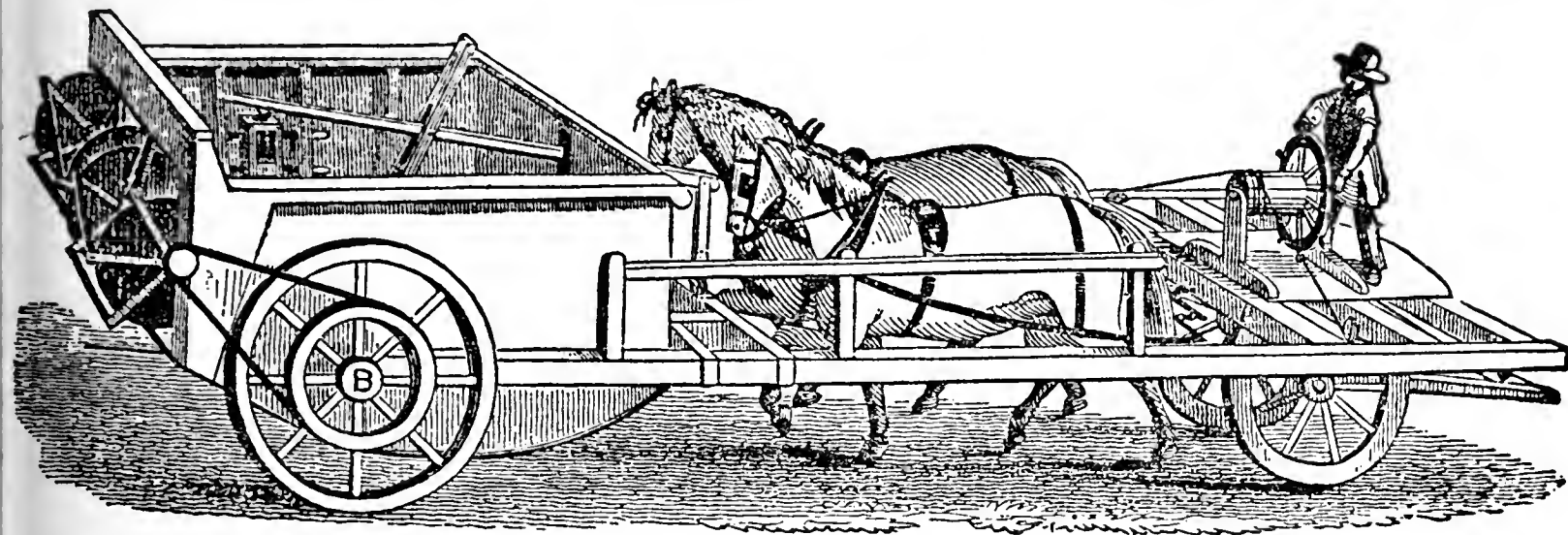


FIG. 45.—Esterly's header.

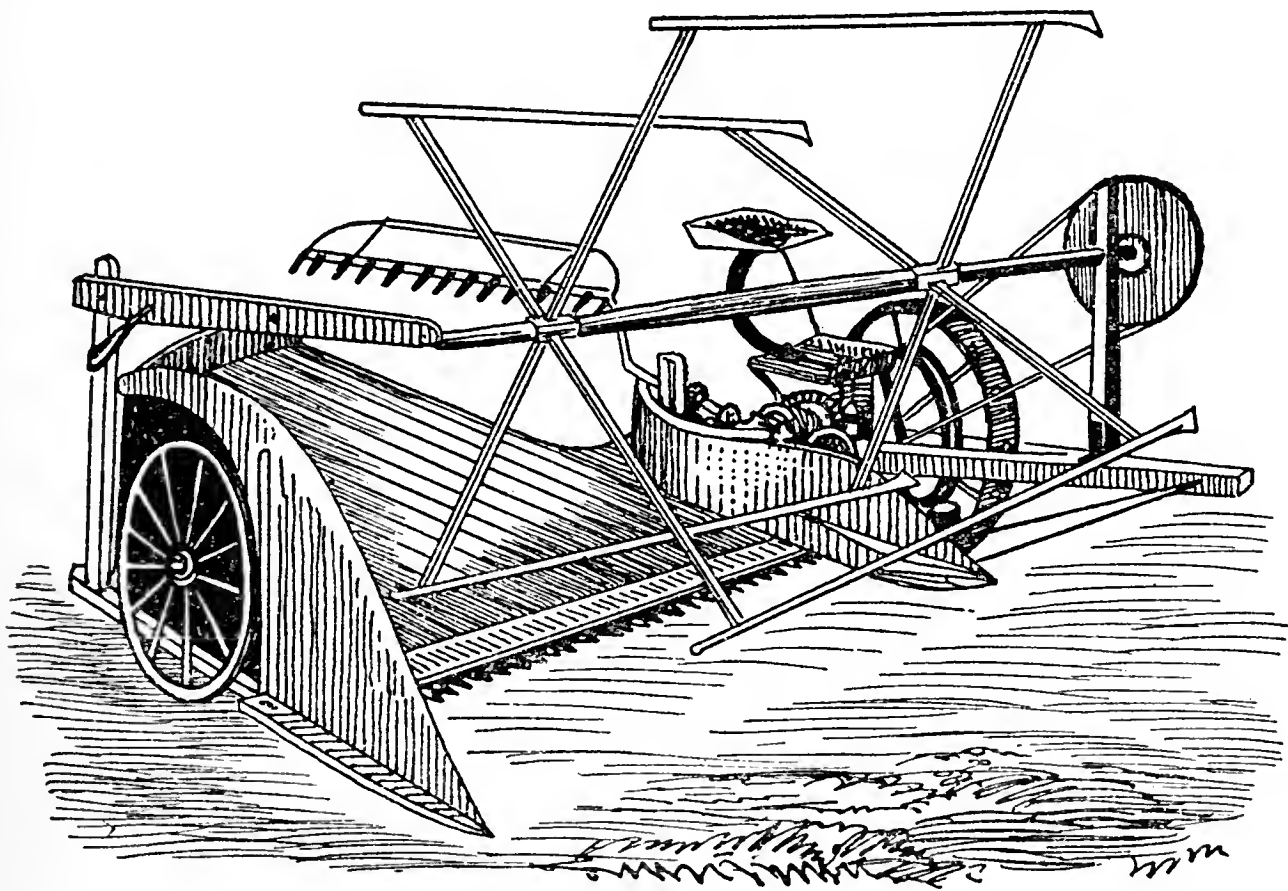


FIG. 46.—The New York self-raking reaper.

ship of their complicated machinery. It was found, also, that the heads of grain, if not dry when cut, would shrivel and mold in the stack. This was probably the principal reason for the rejection of headers. They have since proved successful in dry regions where the grain can be allowed to cure properly before it is cut. By 1850 the self-rake reaper began to come into use, and thus the work of another man in the harvesting of wheat was done by machinery. (See fig. 46.)

GENEVA TRIALS, 1852, SHOW DEFECTS OF REAPERS AND MOWERS.

It was difficult to determine which was the best machine. In addition to the local trials held annually at agricultural fairs to test the relative merits of the several machines, there were State, national, and even international competitions. At a trial held by the New York State Agricultural Society at Geneva in 1852, 9 machines competed as reapers and 7 as mowers. Only one or two of the reapers did fair work. Nearly all left the stubble very uneven. Frequent delays resulted from the breaking of parts or the clogging of the cutter-bar. The draught in all of them was very heavy, and some of the best of them had a side-draught that was destructive to the team. Yet the judges decided that, in comparison with the hand cradle, they showed a saving of $88\frac{3}{4}$ cents per acre. Of the 12 machines exhibited, only 2 had self-rake attachments. The work of the mowing-machines was equally unsatisfactory. Only 2 or 3 were capable of equaling the common scythe in the quality of work performed, and only one completed the trial without clogging. All the machines had heavy side-draught. At the completion of the trial, however, the committee reported that "the excellence discernible in the best Mowing Machines now exhibited, leaves no doubt as to their utility."²⁸

VICTORIES OF AMERICAN REAPER AND THRESHER AT PARIS, 1855.

A year before the Geneva trial, an American reaping machine had achieved international fame by winning the medal in a contest at the industrial exhibition in London by cutting a strip of wheat 74 yards in length in 70 seconds.²⁹ At the International Exposition at Paris in 1855, the American machines were again brought into competition with the world. Three machines were

TABLE 35.^a

	Wheat threshed in one hour.	
	<i>liters.</i>	<i>bus.</i>
Flails	36	.83
French machine	150	3.45
French machine	250	5.75
English machine	410	9.43
Pitt's American machine.....	740	17.02

^a U. S. Commissioner of Agriculture, *Annual Report* (1872), p. 290.
(A liter equals 0.023 bus.)

entered for the first trial, one American, one English and a third from Algiers—all self-raking machines. The American machine completed its work in 22 minutes, the English in 66, and the Algerian in 71. At a later trial on the same field, three other machines were entered of American, English, and French manufacture. The American machine did its work in 22 minutes, while the other two failed. At the same exposition an American threshing

²⁸ N. Y. State Agric. Soc. *Transactions*, X (1852), p. 108.

²⁹ *Ibid.*, IX (1851), Appendix, 94.

machine won the victory over several competing machines. To determine the comparative rapidity and economy of threshing by hand and by machine, 6 men were set to work with flails, with the results shown in table 35. These repeated triumphs attracted wide attention to the improvements in agricultural machinery in America.

During the early fifties the reaper was gradually supplanting the cradle in the wheat fields of the country, but as yet the acreage in grain in the Western States was largely limited to the capacity of the cradle. As shown by the trial at Geneva, the reaper was still imperfect and rather uncertain. Moreover, in a large part of the West there was little incentive to produce large amounts of wheat on account of the lack of markets and low prices. Rising prices of wheat caused a "boom" in agriculture from 1854 to 1857 and caused almost universal demand for reapers in the wheat-growing regions. Wheat in New York sold at \$1.06 in October 1852, at \$1.73 in October 1854, and at \$1.80 in the same month in 1855. (See fig. 66, p. 313.) With the rapid extension of railroads these increased prices were quickly reflected in the Western States. When the wheat from an acre of land would sell for more than the price of the land, it was considered a safe investment to sow more land in wheat and buy a reaper. High prices, the California migration, and extensive internal improvements were causing a pronounced shortage of labor just at the time when it was most wanted in the wheat fields. Reapers were introduced as fast as they could be manufactured.

SYRACUSE TRIALS, 1857, SHOW STRIKING IMPROVEMENTS IN REAPERS.

In 1857, five years after the Geneva trial, the United States Agricultural Society instituted a national trial at Syracuse, New York. More than 40 mowers and reapers entered and were brought to test on the field. It was soon apparent that striking improvements had been made since the meeting at Geneva. The draught had been considerably lessened in all the machines and the cutting apparatus had been much improved and the construction was more substantial. The best machine performed as perfectly at the rate of 1 mile an hour as at 3 or 4 miles, the rate formerly necessary. On the whole, the reaper had become a reliable machine. During the late fifties, wire-binder attachments for reapers began to appear on the market, but they were generally unsatisfactory and few were in use before 1860. The Marsh Brothers built their first harvester in 1858, but it was not until 1864 that it was successfully placed on the market.

SAVING IN LABOR EFFECTED BY REAPERS.

In 1860 it was said that the reaper had supplanted the cradle in the wheat-growing regions, although the latter was still widely used. Perhaps one-half of the machines in use in 1860 were self-raking. The machines employing the hand rake were simpler and cheaper and therefore still preferred by many. In a comparison of the reaper and cradle at the Geneva trial, it was asserted by the committee in charge that the cradling and binding of a field of 15 acres of wheat in one day would require 14 or more men. The reaper,

on the other hand, if it did good work, would require "two men to control it and needs seven, or at most eight men to rake and bind the grain and shock the whole in the same day," a total of 9 men to do the work in one day. Fifteen acres was a large area for an early reaper to cut in one day, but at that rate the saving of labor in harvesting wheat by the use of the reaper would have been 5 men out of 14.³⁰ In addition, the reapers saved grain; by enabling the farmer to harvest his wheat within a short time after the grain ripened much loss from shattering was prevented.

DEVELOPMENT OF MOWING MACHINES.

The early mowers and reapers were usually made interchangeable. By removing the platform at the rear of the cutter-bar, the reaper could be transformed into a mower. Hussey and McCormick offered their reapers as mowing machines, and Ketchum, Emery, Manny, Brown, Mabie, and others

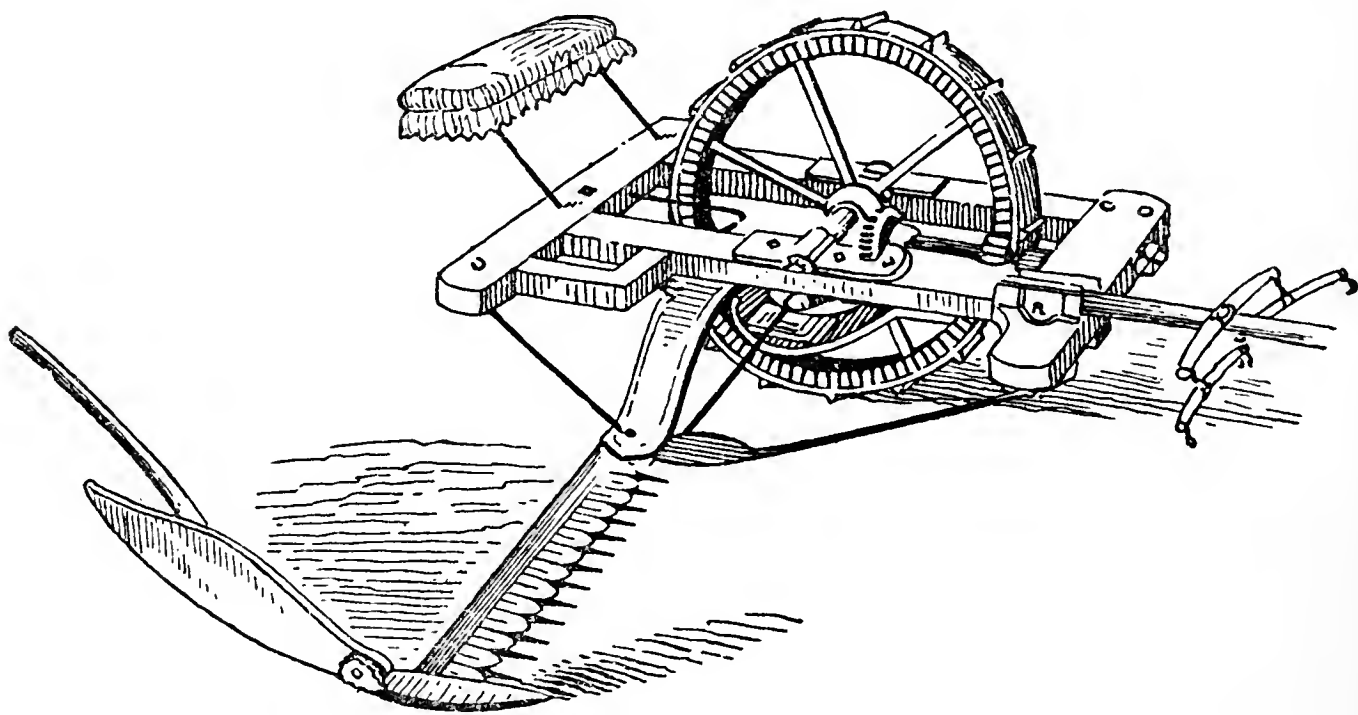


FIG. 47.—Ketchum's mowing machine (1845).

The Ketchum mower, first patented in 1844 and again in 1846 and 1847, was the first successful machine designed solely for mowing and not combined with the reaper.

had mowing machines on the market. Of the 7 machines on trial as mowers at Geneva, New York, in 1852, all but 2 were also classed as reapers. Manny's machine (patented in 1831) and Hussey's (patented in 1833) possessed many of the essential features of the modern mower; but the first successful machine designed only as a mower was that of W. F. Ketchum, patented in 1844 and again in 1847 (fig. 47). Another early mowing machine, widely used after 1850, was that of Ebenezer Danford. At the Syracuse trial in 1857, 15 mowing machines were entered, 9 reapers, and 14 combined mowing and reaping machines.³¹ At a trial held under the auspices of the Ohio State Board of Agriculture in the same year 12 combined reapers and mowers, 2 reapers, and 2 mowers were entered.³²

³⁰ N. Y. State Agric. Soc. *Transactions*, X (1852), p. 116.

³¹ U. S. *Census of 1860, Agriculture*, p. xxi.

³² Ohio State Board of Agric., *12th Annual Report* (1857), p. 42.

DEFECTS OF EARLY MOWERS.

Aside from the many difficulties to be overcome in the early reapers, there was the additional requirement in the case of the mowing machine of cutting regularly and close to the ground. With the early machine with its single drive-wheel and rigid cutter-bar this was almost impossible, except on a level surface. Another objection to this type of mower was that the driver had to leave his seat at every corner to avoid tearing up the sod.³³ The knives also were apt to clog in fine grass.

At the trial of reapers and mowers held by the New York Society at Geneva in 1852, "seven machines competed as mowers. Only two or three

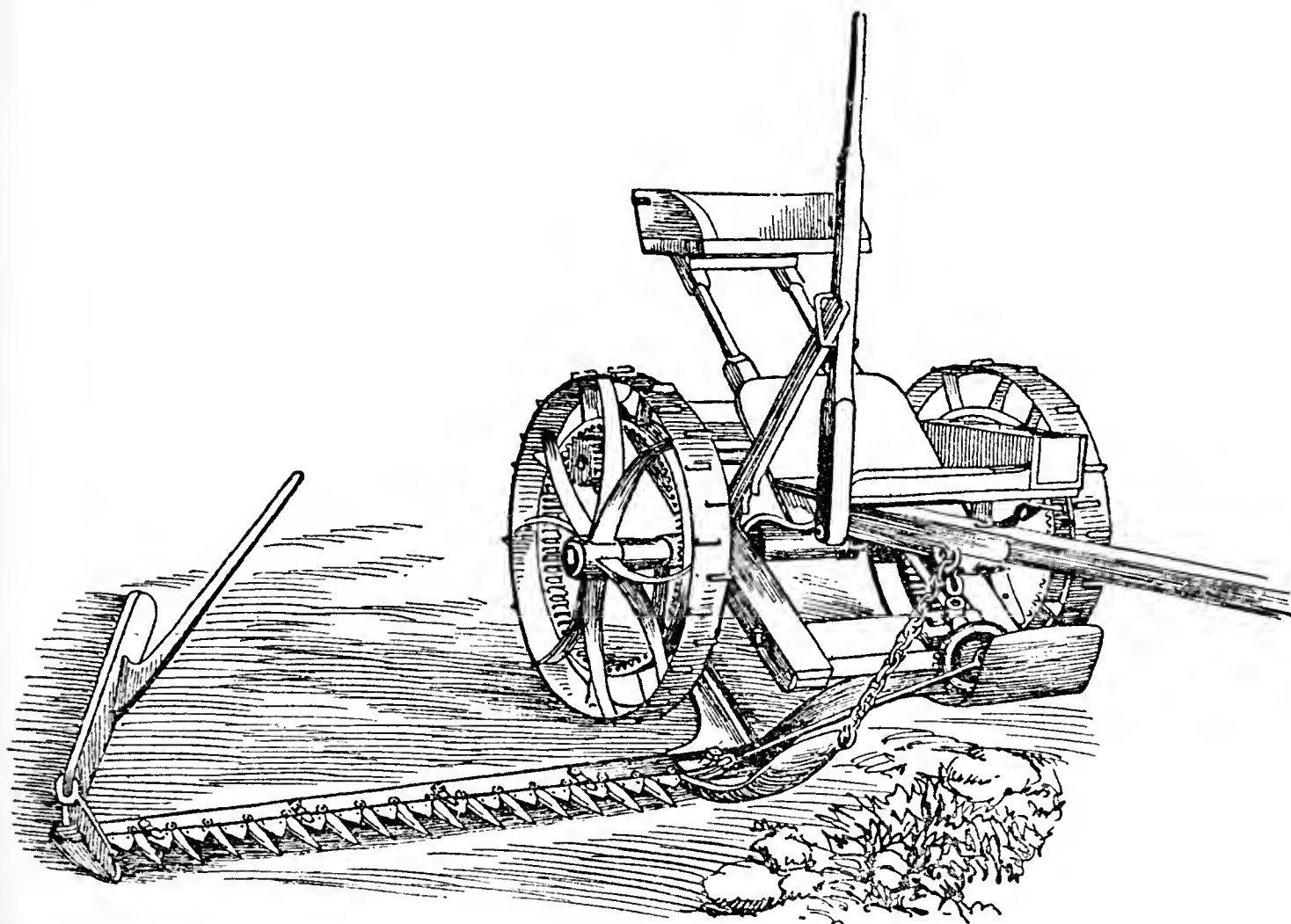


FIG. 48.—The Wood mower (1859).

It was not until the late fifties that the modern two-wheel machine with flexible cutter bar made its appearance. With its advent the problem of a mower had been fairly well solved.

. . . were capable of equaling the common scythe in the quality of work they did," all had heavy side-draught, and not one of them "when brought to a stand in the grass, could start again without backing to get up speed." "None of them could turn about readily within a reasonable space," nor without danger of tearing up the sward. Only the Manning, patented in 1831, and the Ketchum appeared to be capable of doing work that was at all satisfactory.³⁴ The patents of Cyrenus Wheeler in 1856 marked the beginning of the modern two-wheeled mower with a flexible cutter-bar, a machine entirely distinct from the reaper. The transition to the two-wheeled machines was,

³³ *Country Gentleman*, V (1855), p. 201.

³⁴ U. S. Commissioner of Agriculture, *Annual Report*, 1872, p. 287.

however, by no means abrupt. The single-wheeled mowers gained some of the advantages of the two-wheeled type by the addition of a small wheel at the inner end of the cutter bar, which allowed the operator to raise and lower it at will.³⁵ At the Syracuse trial in 1857 it was evident that marked improvement had been made in mowers as well as in reapers. "Most of the machines could now cut fine and thick grass without clogging, . . . but of the nineteen that competed as mowers, only three could start in fine grass without backing. . . ." With the appearance of the Buckeye (1856) and the Wood (1859) (fig. 48), this important farm machine attained a thoroughly practical form.³⁶

THE SAVING OF LABOR EFFECTED BY MOWING MACHINES.

Contrasting the mowing machine with the man with the scythe, John Johnson wrote to the *Country Gentleman* in 1858:³⁷

"In the first place, in this section of the country, for several years past, no good mowers could be hired for less than \$1.50 per day and board, and I never saw five mowers together that would average over one acre each, daily, and seldom that where the acre would yield two tons of dry hay, and if cut as close and even as the machines, not near that. For years before we had mowing machines, I often let my mowing by the acre, and paid from \$1.25 to \$1.50, beside board. Now I could get any quantity I ever had, or ever will have to cut, done for 62½ cents per acre by horses, and they will cut ten acres per day. The difference of board of ten men in place of one man and one pair of horses, is no small item. But we can cut our grass at much less expense with our own machines and horses, than to hire it done at 62½ cents per acre, as any smart boy, or lazy farmer, or old man, can drive the horses, and that is all he has got to do; and farmer's horses would generally be idle when he is toiling at cutting down his grass."

THE HORSE-RAKE.

For raking hay the wooden horse-rake, which had been introduced about 1820,³⁸ had come into common use and was fast superseding the old hand-rake. A Connecticut writer reported in 1844 that "the horse rake has recently been introduced among us with good results, enabling one man with a horse to do the work of five or six with small rakes."³⁹

The "common horse rake" (fig. 24, p. 213) as constructed in 1840 was a simple affair. It consisted of 15 to 18 wooden teeth projecting from both sides of a head-piece. Ropes were attached to this head-piece and the horse was hitched to these ropes. In the center were two handles by which the rake was guided. In use, the teeth ran along flat upon the ground, passing under and collecting the hay. When full, the handles were thrown forward, the rake was emptied, and lifted over the winrow for another load. The "revolving wooden horse rake" (fig. 25, p. 214) was, however, in more general use. With this the only labor in unloading each rakeful of hay was to lift the handles slightly, causing the teeth to make a semi-revolution and drop the load without stopping. It was said that from 2 to 3 acres of hay an hour could be raked with this machine.⁴⁰

³⁵ *Country Gentleman*, V (1855), p. 201.

³⁶ U. S. Commissioner of Agriculture, *Annual Report*, 1872, p. 288.

³⁷ *Country Gentleman*, XI (1858), p. 193.

³⁸ *American Farmer*, II (1820-21), p. 312.

³⁹ *Cultivator*, new series, I (1844), p. 123.

⁴⁰ *Cultivator*, VII (1840), p. 89; Elliott, *Notes Taken in Sixty Years*, 45-47.

Improvements had been made in the horse-rake between 1840 and 1850, by the substitution of iron or steel wire for wood in the teeth, but the wooden revolving horse rake was still the most widely used. In regions where the fields were rough or small, much hay was still raked by hand. The committee on agricultural implements for Norfolk County, Massachusetts, reported in 1849 that, through strong attachment *to old usage*, not one farmer in ten in the county used the horse rake.⁴¹ Ten years later the sulky wire-tooth rake was rapidly coming into use. (See fig. 49.)

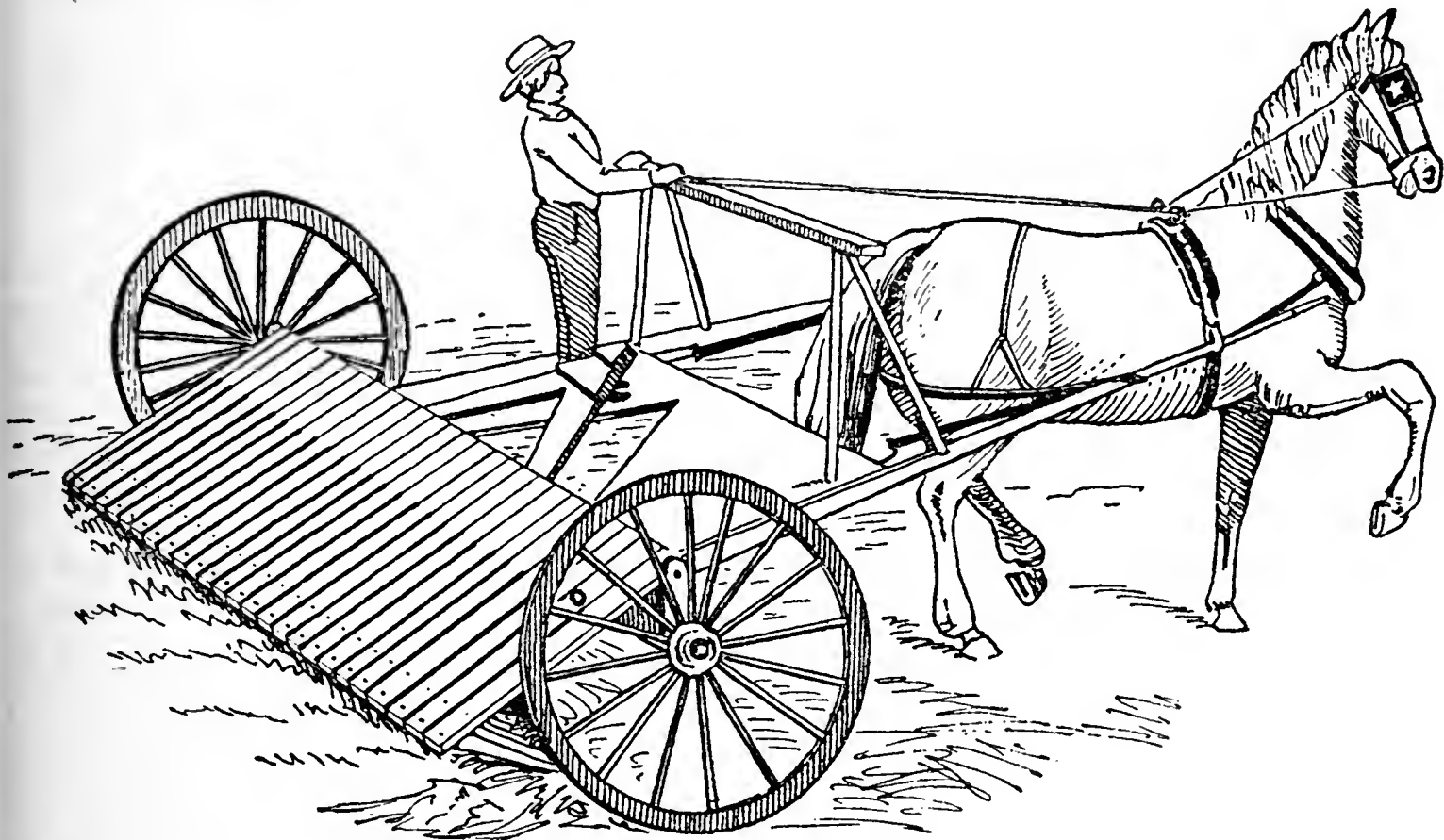


FIG. 49.—Delano's horse-rake

During the fifties the wheel-horse rake with independent teeth began to come into use. One man could operate it. A Massachusetts farmer wrote in 1856, "We formerly used the revolver with good success, but for the last four or five years we have used Delano's independent horse rake and like it better than the revolver, as it is easier for the horses, easier for the person who uses it, and rakes better on uneven land."

OTHER HAYING MACHINES.

Clover-hullers, hay-forks, and hay-balers were rapidly coming into use in 1860. In regions where clover seed was grown a very profitable business was carried on by persons owning clover-seed harvesters and hullers, who traveled from farm to farm and gathered and cleaned the seed. Some did this on shares, giving the farmer one-third to one-half the crop, but others charged a specified price, usually about \$1 per bushel.⁴² Mowing-machines, hay-tedders, horse-rakes and hay-caps greatly lightened the labor and diminished the risk of curing hay.

THRESHING MACHINES.

Several methods of threshing were in use in 1840. Much of the small grain was still beaten out with a flail, or trodden out by horses or cattle, according

⁴¹ Mass. State Bd. of Agric., *Transactions of the Agricultural Societies* 1849, p. 295.

⁴² *Country Gentleman*, XVI (1860), p. 173.

to the custom or convenience of the farmer. Stationary and portable threshing machines of various types were in use in the East, the most popular of which was a simple device consisting of a spiked cylinder inclosed in a case and mounted on a wooden frame. (See fig. 26, p. 215.) Power was usually furnished by 2 or 4 horses attached to a sweep. (See fig. 50.) The whole machine

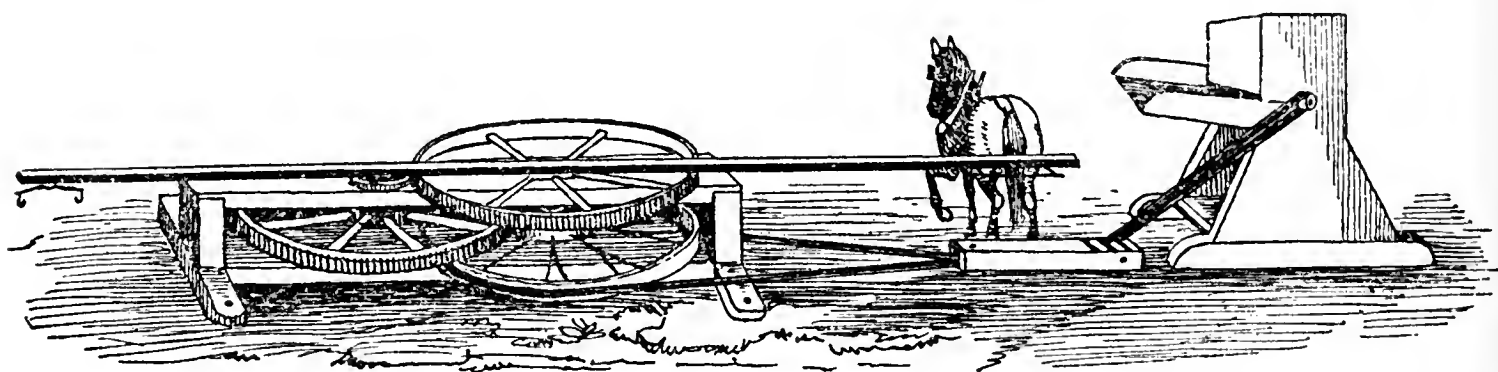


FIG. 50.—Warren's horse power and threshing machine.

This was another early machine. A Massachusetts farmer wrote describing a machine in common use in Berkshire County in 1839, "It performs its work well and with despatch. It is moved by three horses or by two yoke of oxen. The thrasher is placed on the barn floor and is connected by a belt with the moving power to which the cattle are attached in the yard. The whole can be put into a small wagon and easily conveyed from place to place. The cost is \$75.00. With proper attendance I was told, that 120 bushels of wheat or 300 bushels of oats might be thrashed by it in a day."

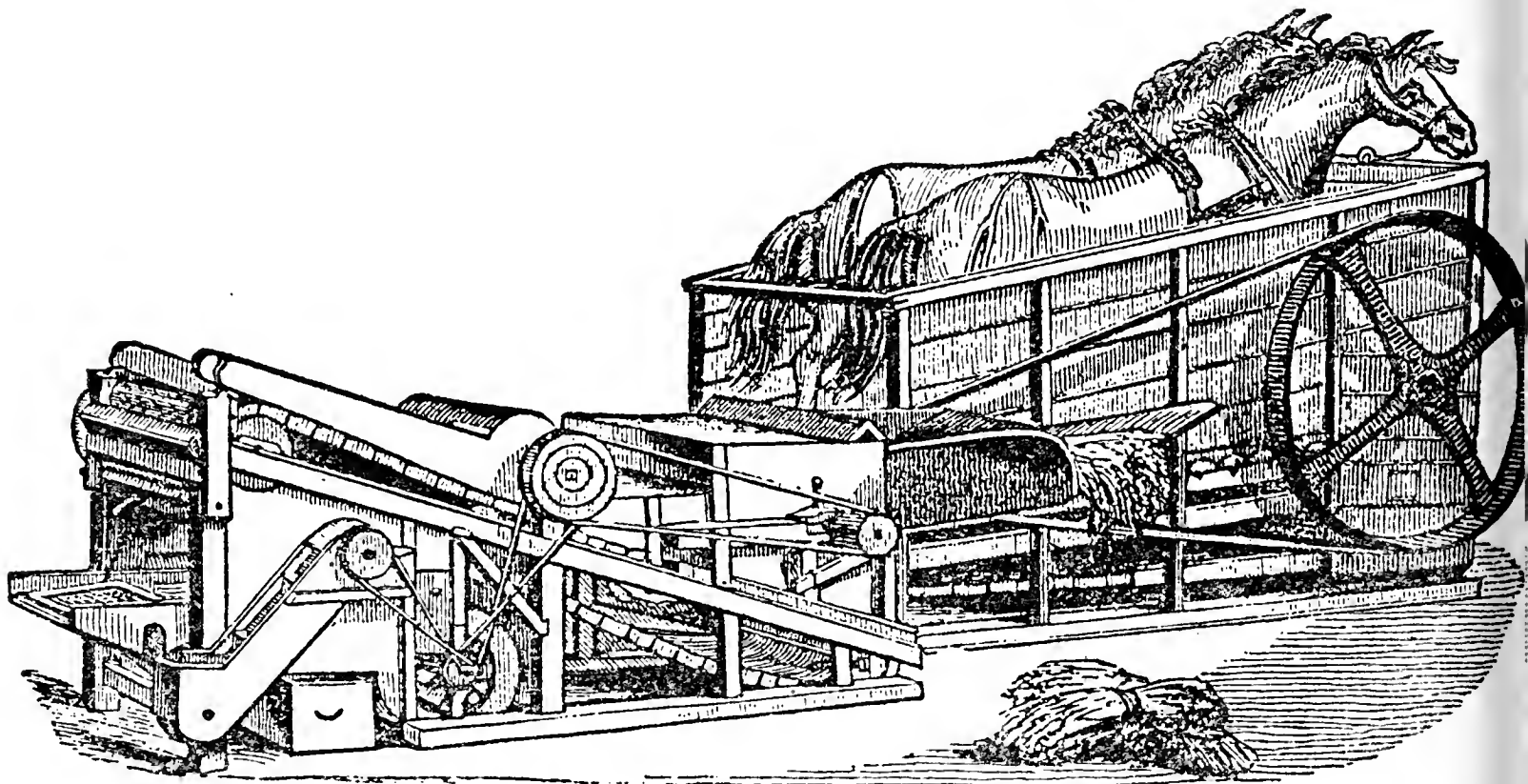


FIG. 51.—Pitt's thrasher and cleanser.

In 1834 H. A. Pitt of Winthrop, Maine, conceived the idea of combining the common "ground hog" thrasher and the fanning mill. In 1840 Pitt moved to Albany and began the introduction of his machine into western New York. From 20 to 25 bushels of wheat per hour was considered a fair speed for a 6 or 8 horse machine.

could be loaded in a wagon and moved from place to place. The winnowing was done in a fan-mill turned by hand. In 1843 the committee on exhibits at the New York State Fair reported that in their opinion a two or three horse power machine that would thresh from 100 to 150 bushels of grain a day with the farmer's own team and help was generally desirable.⁴³

⁴³ N. Y. State Agric. Soc. *Transactions*, III (1843), p. 43.

After 1840, Pitt's thrasher and cleanser (see fig. 51) came into rather general use, and by the middle of the decade machines with which the grain was threshed and separated in one operation were in common use in wheat growing sections.⁴⁴ The Pitt machine of 1840 weighed about 700 pounds, was about 8 feet by 2 feet 4 inches in size and was driven by 6 or 8 horses on a sweep. It threshed from 20 to 25 bushels of wheat an hour. Four hands were required to tend the machine—one to forward the bundles, one to feed, one to measure and put the grain into bags, and one to pitch away the straw. Since it could easily be moved from place to place, it was used in the field as well as under shelter. By 1843 it was reported that the stationary threshing machine had practically gone out of use in western New York.⁴⁵

After 1850 the enlarged Pitt machine run by 6 to 8 horses attached to a sweep and threshing 300 bushels of wheat a day, was commonly used by the large farmers and by men who made it a business to go from farm to farm and thresh by the bushel. The Wheeler horse power and thresher, a smaller machine driven by 2 horses in a treadmill and threshing about 150 bushels a day, was widely used by the smaller farmer. By 1860 still further improvements had been made and in all wheat-growing regions the wheat was largely threshed and separated by portable machines, the newer and larger types of which screened and cleaned the grain.

SEED DRILLS.

In 1840 wheat was sown broadcast by hand and harrowed in with a harrow or steel-tooth cultivator, but by the middle of the decade drills were coming into use, and by 1850 they were rather generally used in the wheat regions of

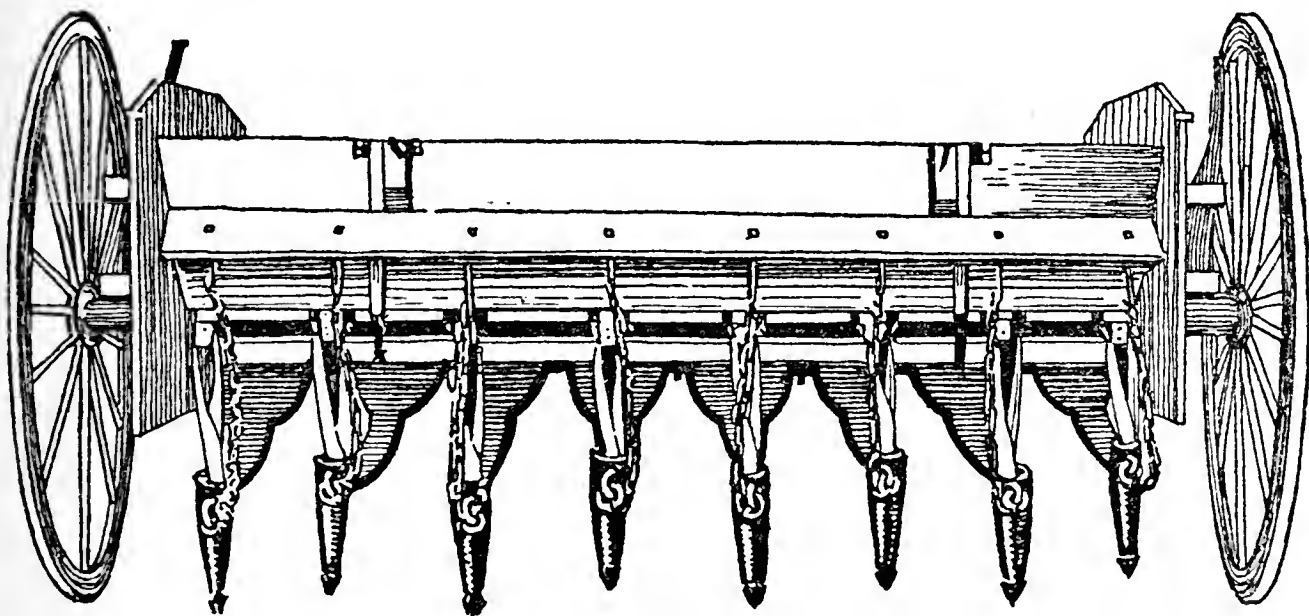


FIG. 52.—Henry W. Smith's seed drill.

An improved seed drill of the fifties. The teeth of this machine could be raised 12 to 16 inches and thus pass over any small obstruction.

Pennsylvania and New York. (See fig. 52.) The Pennock drill, patented by Moses Pennock, of Chester County, Pennsylvania, was one of the most satisfactory. This machine as used in 1847 sowed 7 rows 9 inches apart and about 3 inches deep, the outside drills being 4 feet 6 inches apart. The machine was

⁴⁴ N. Y. Agric. Soc. *Transactions*, III (1843), p. 453; Ohio State Board of Agriculture, *1st Annual Report* (1846), p. 27.

⁴⁵ N. Y. Agric. Soc. *Transactions*, III (1843), p. 453.

drawn by two horses and planted from 10 to 15 acres a day. The drill, however, was not as rapidly adopted as the reaper, and until 1860 a large part of the small grain in the Mississippi Valley was still sown broadcast by hand. West of the Mississippi the drill was but little used.

CORN PLANTERS.

There was a similar improvement in machinery for the planting and cultivation of corn. In 1840 corn was dropped by hand and covered with the hoe

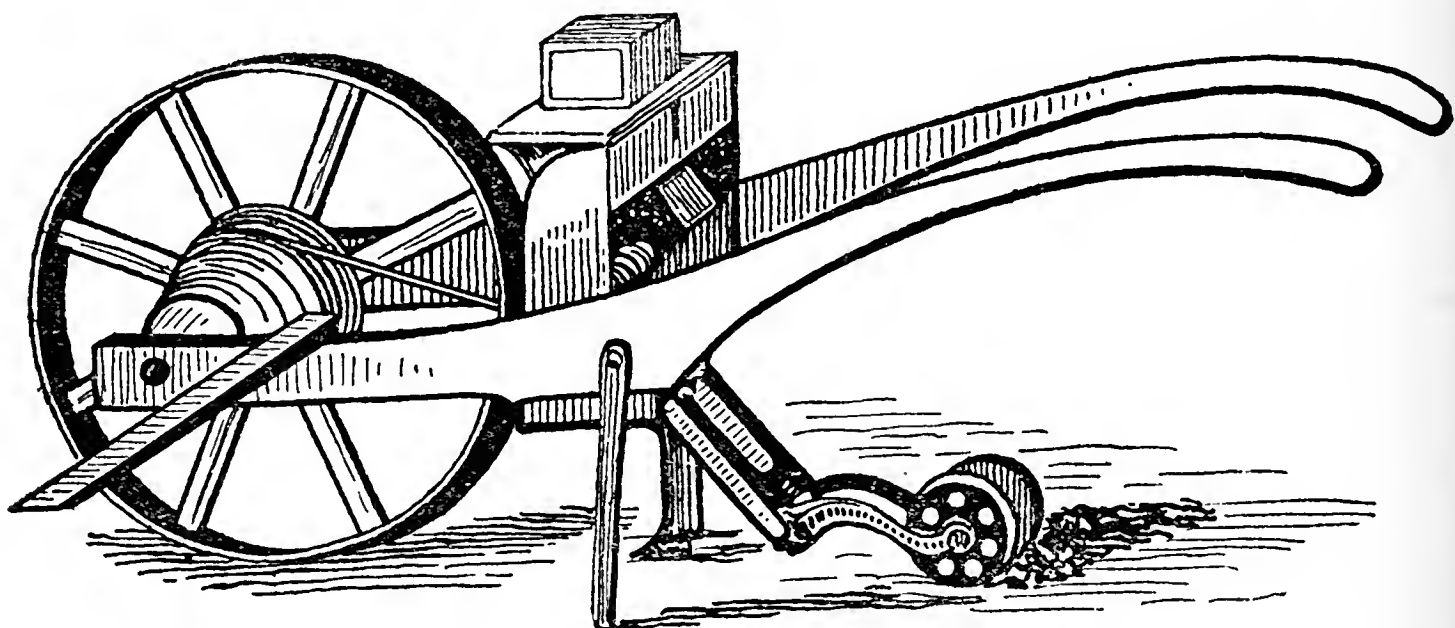


FIG. 53.—Cole's corn planter.

The corn crop of 1840 was planted with the hoe, the plow or the ax. Drills of various construction, propelled by man or horse power, were upon the market, but their use was confined principally to sowing turnips, beets and other small seed.

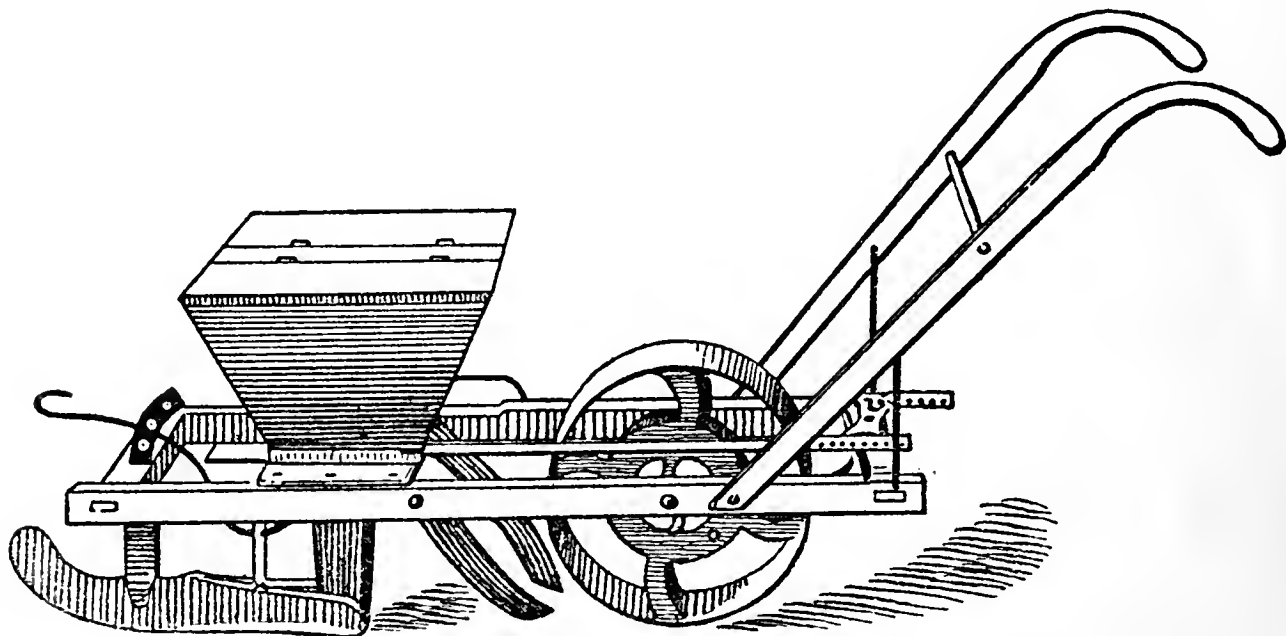


FIG. 54.—Billing's improved corn planter and fertilizer.

During the fifties many new machines, much improved, came into use, some of which dropped both seed and fertilizer and covered and rolled them as fast as a horse could walk. It was claimed (in 1856) that the Billings machine, which had the essentials of a modern planter, was capable of planting from 6 to 10 acres per day.

or the plow. Hand planters and drills, it is true, were used to some extent in the East, but there was as yet no satisfactory machine for the planting of corn. (Figs. 53 to 56.) During the fifties, corn planters came rapidly into



FIG. 55.—Randall & Jones' corn planter.

During the fifties two-row planters which would plant in check rows appeared. Some of these were hand planters, one of the most popular of which was put out by Randall & Jones. With this machine the operator was said to be able to plant about as fast as he could walk.

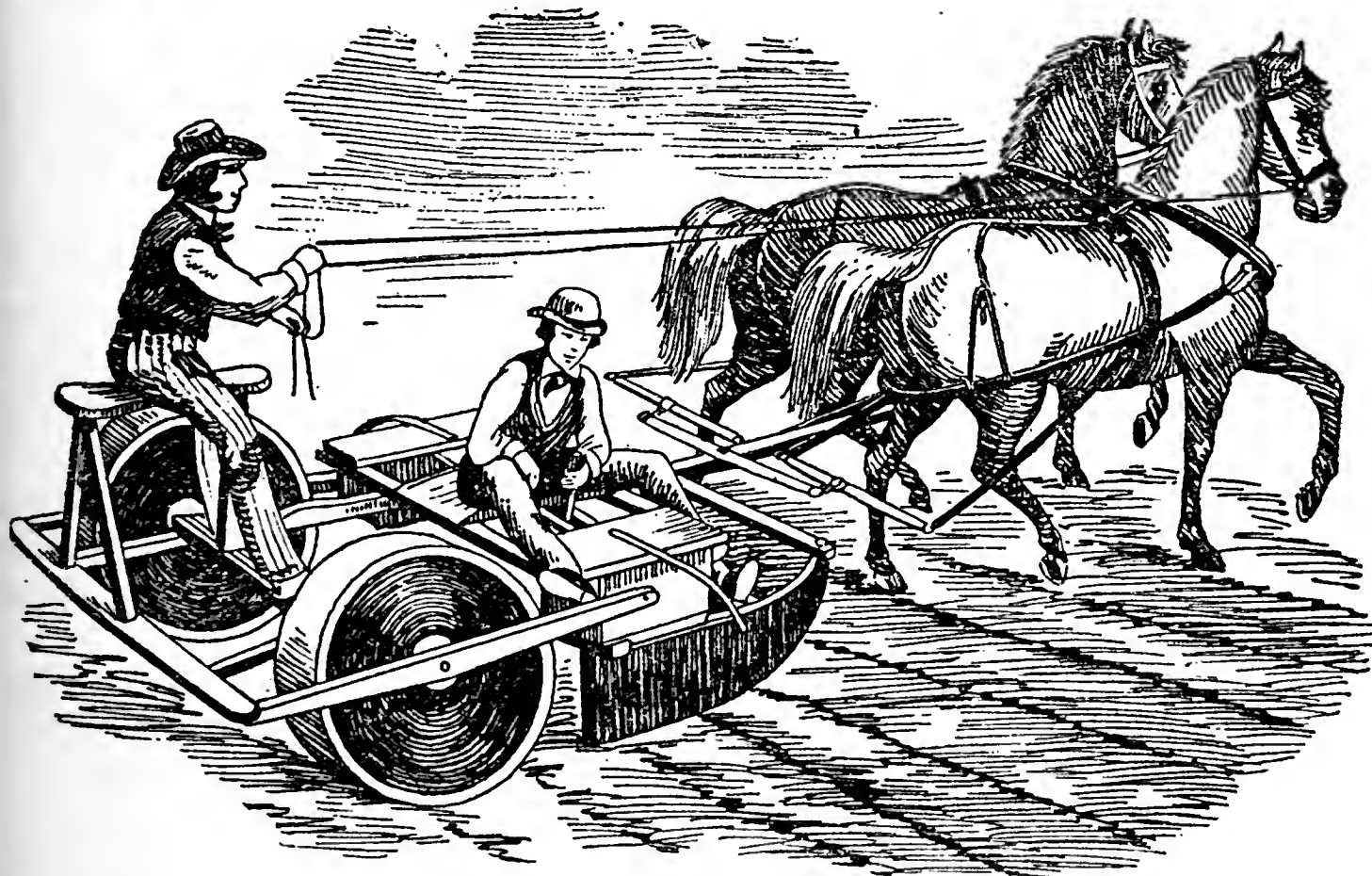


FIG. 56.—Brown's corn-planter.

Brown's Corn Planter was a double machine drawn by two horses, planting two rows at a time. It required two men, one to drive and the other to manage the lever by means of which the corn was deposited in the ground at the point desired. "This machine," wrote one in 1861, "will plant 12 to 20 acres in a day and do the work better than a man can plant half an acre a day with a hoe."

use, and by 1860 a large portion of the corn crop of the West was planted by one-row and two-row planters, hill planters, and drill planters.

CULTIVATORS.

In 1840, corn in the East was cultivated with a hoe or with an awkward and ineffective one-horse cultivator (fig. 57). The teeth, usually of cast-iron, were fastened to the wooden frame with a short neck, rendering operation difficult on uneven land or where there were stumps and stones (fig. 58). The plow for the cultivation of corn had gone out of use in the East. In the

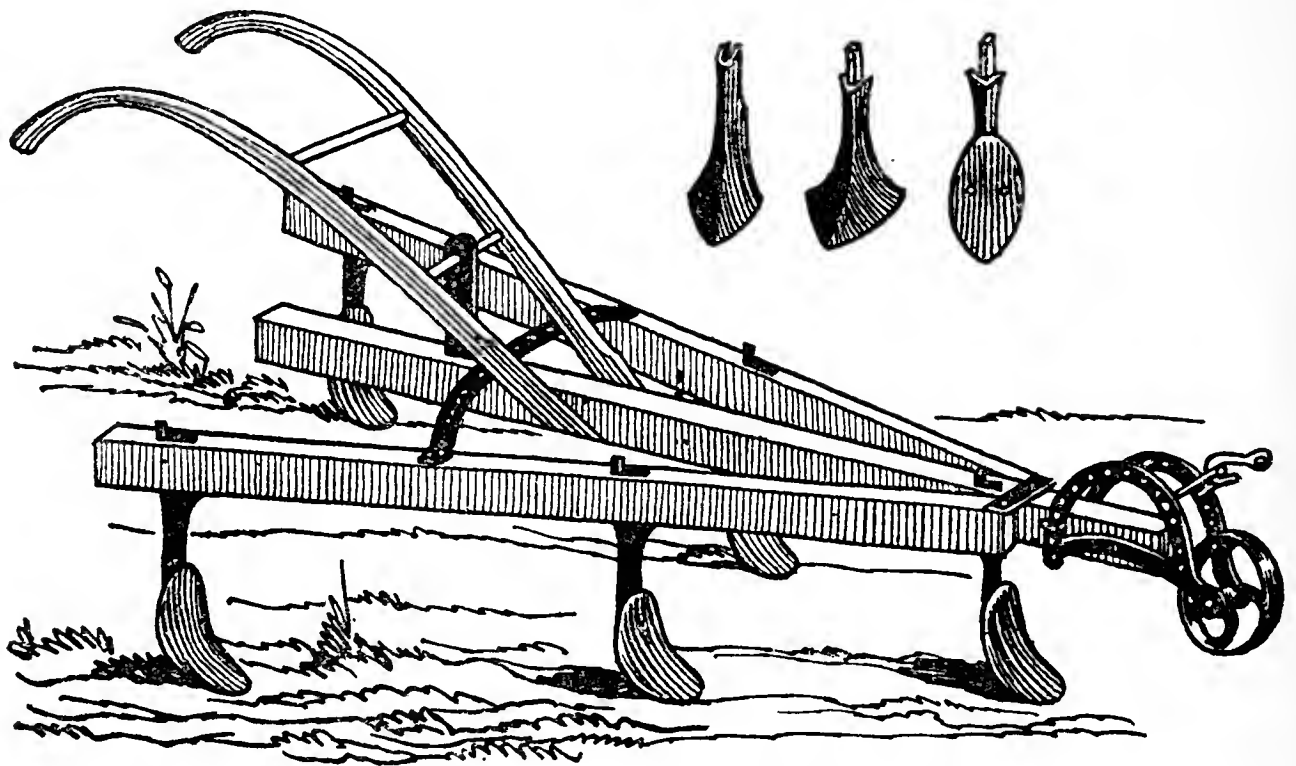


FIG. 57.—The cultivator.

During the forties the cultivators were greatly improved. Steel teeth were substituted for iron and the neck was considerably lengthened. By the late forties these implements were supplanting the old method of plowing the corn in Ohio. Farther west they were as yet but little used.

West the one-horse plow or the shovel plow (fig. 59) were the implements commonly used for corn cultivation. Later, about 1850, another shovel had been added and the double-shovel plow (fig. 60) became common.⁴⁶ Three-shovel plows and steel-tooth cultivators were coming into use. By 1860 straddle-row cultivators of various types had appeared.⁴⁷ The use of steel in the teeth greatly increased the efficiency of the implement. A great saving in man and horse labor was effected by the improvements in corn cultivators and planters in the years 1840 to 1860, and in addition there was a great improvement in the quality of work performed.

⁴⁶ Indiana State Board of Agriculture, *Annual Report*, 1859, p. 64.

⁴⁷ *Country Gentleman*, XVIII (1861), p. 141.

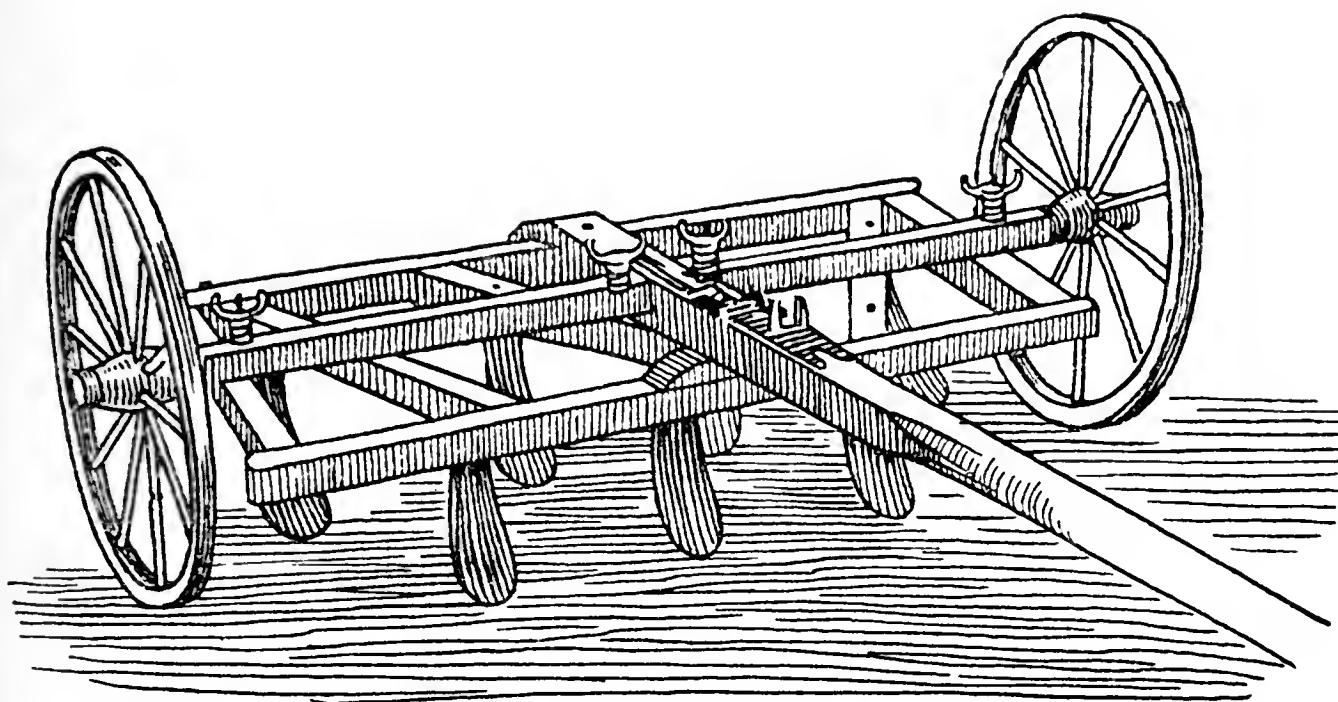


FIG. 58.—Wheat cultivator.

The wheel cultivator was used in the wheat regions of western New York and eastern Ohio. It was considered of great utility in mellowing fallow land for wheat and destroying weeds. The machine had largely gone out of use by the late fifties.

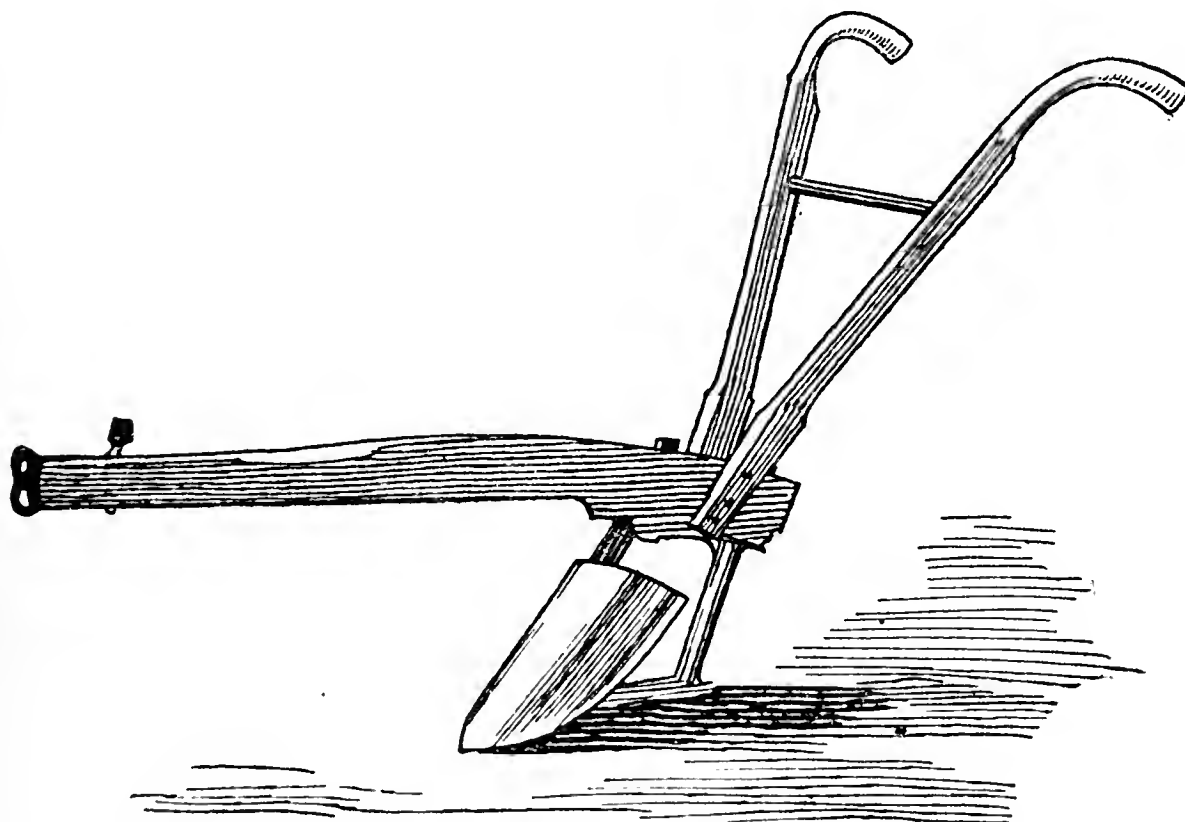


FIG. 59.—The shovel plow.

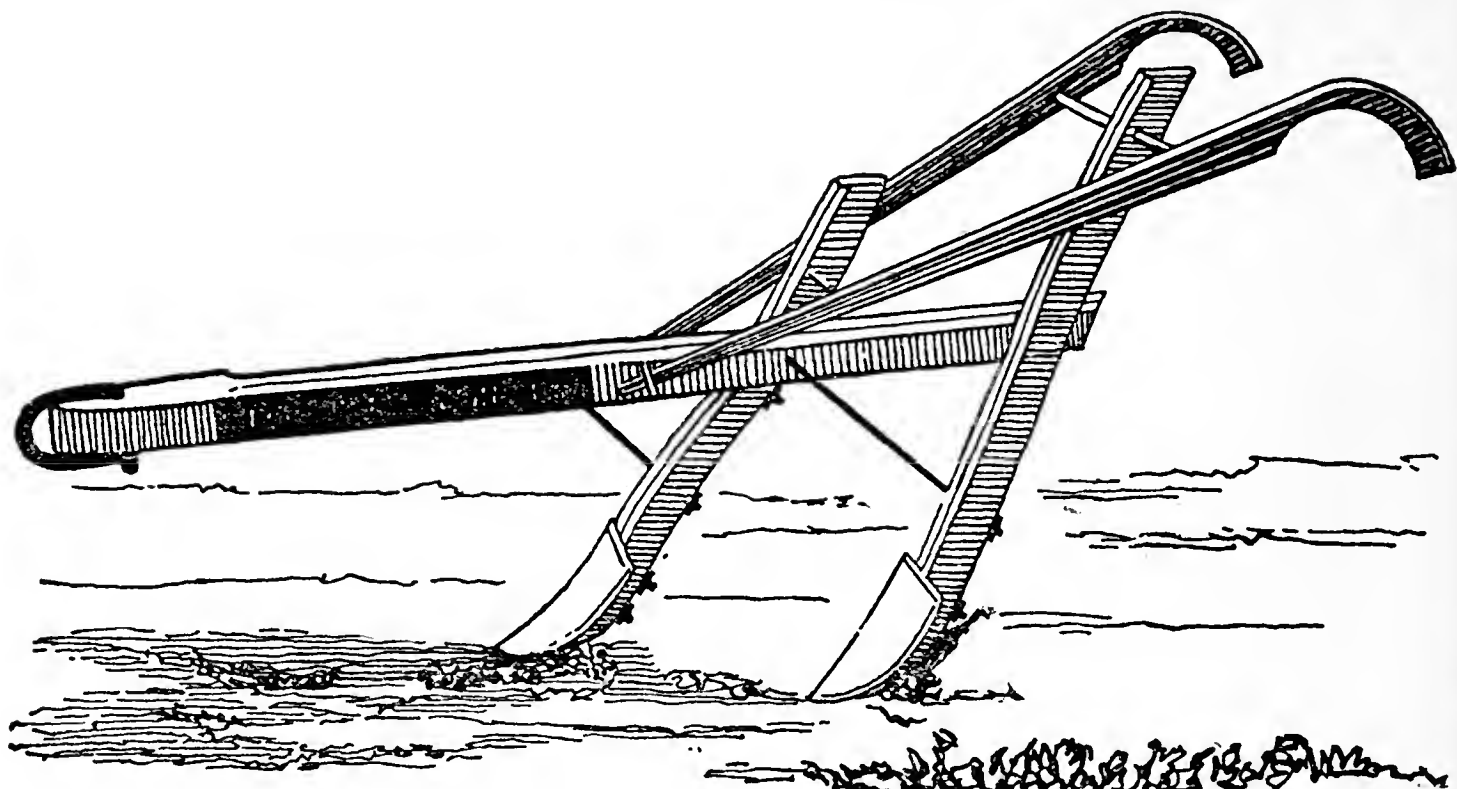


FIG. 60.—Double-shovel plow.

About 1850 the double-shovel plow came into use in the West, supplanting the single shovel.

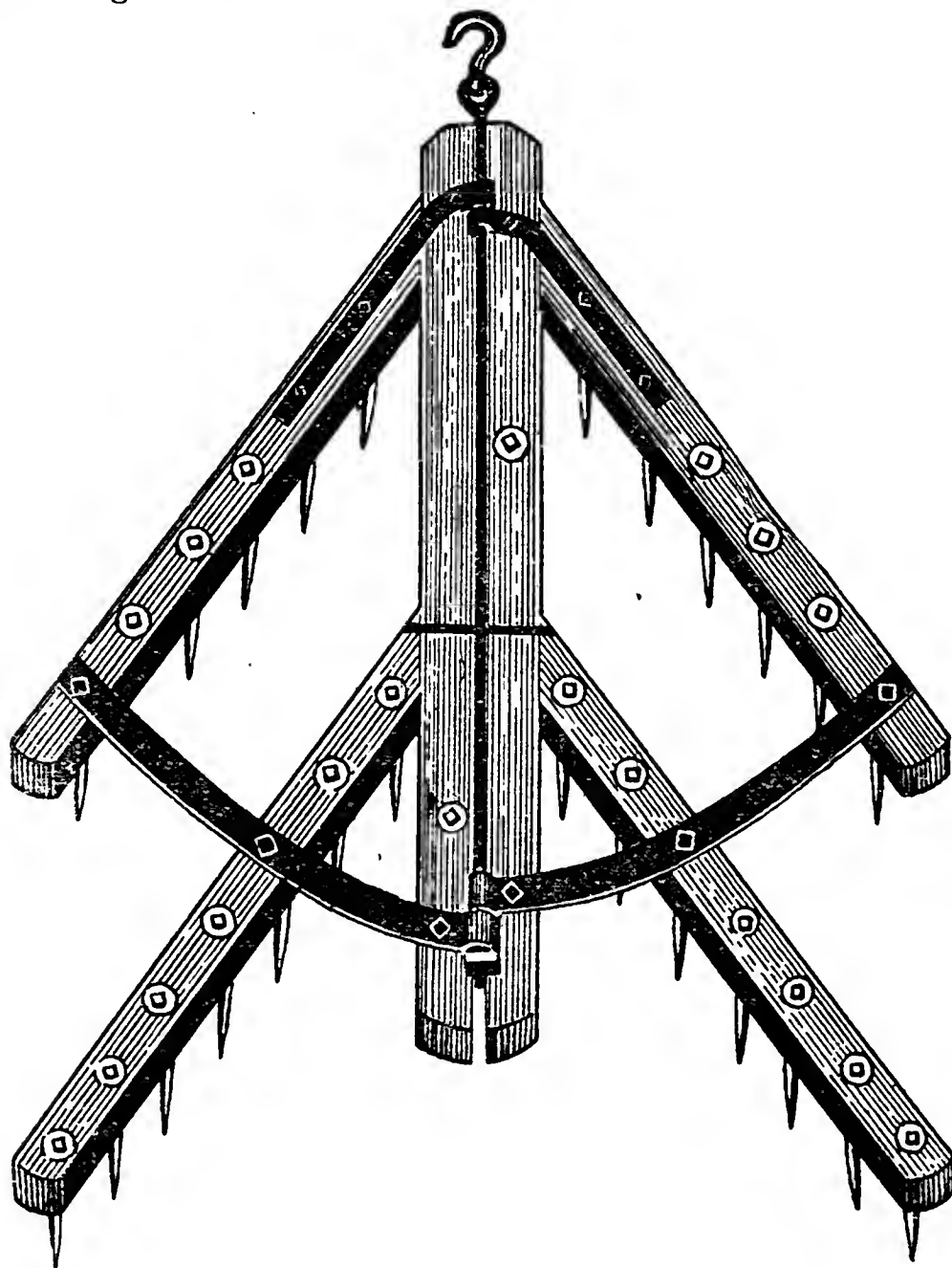


FIG. 61.—Geddes improved harrow.

During the fifties this was a popular type of harrow in New York and other eastern states. It was said to possess many advantages over the square harrow. The draft was less and it was easily cleared of foul stuff when in operation. In Ohio, where it was just coming into use in 1848, the price was \$12.

SUMMARY.

The inventions and improvements which were made in reapers and mowers and in corn cultivators were probably the most significant of all the changes in farm machinery. In the West the amount of wheat which a farmer raised was determined by the acreage that he could effectively harvest. His corn crop was limited by the acreage that he could cultivate. Consequently, the introduction of reapers and cultivators was largely responsible for the rapid expansion of the area of production during this period. Once a new machine was invented, there was always the question as to whether it was economically profitable to use it. The reaper came into use in the Eastern States earlier than in the West. Although better adapted to the level fields of the West, its introduction was at first retarded by the low price of wheat and by the lack of capital among the immigrants. But with the rising price of wheat after 1845, the opportunities for profitable use of machinery were greater and its introduction progressed rapidly.

In 1860 grain was commonly cut with the reaper, but was still bound by hand. The combined thresher and separator with straw-carrier attachment, driven by horse treadmill, had come into use, and steam threshing outfits also had appeared. The field drill and the mowing machine were widely employed. The wheeled horse-rake had begun to supplant the wooden revolving horse-rake. The steel plows had shown their superiority to those of cast-iron. Two-row corn planters and two-horse corn cultivators were being rapidly developed. The single-shovel plow had given way to the double-shovel plow. Hay and root cutters had been brought to a considerable degree of perfection. Small tools, a factory product, now made of steel, had been vastly improved. The Ohio farmer of 1860 who adopted the improved methods of production then available could probably produce his crops with two-thirds the labor required in 1840.

CHAPTER XXIV.—TRANSPORTATION AND MARKETS.

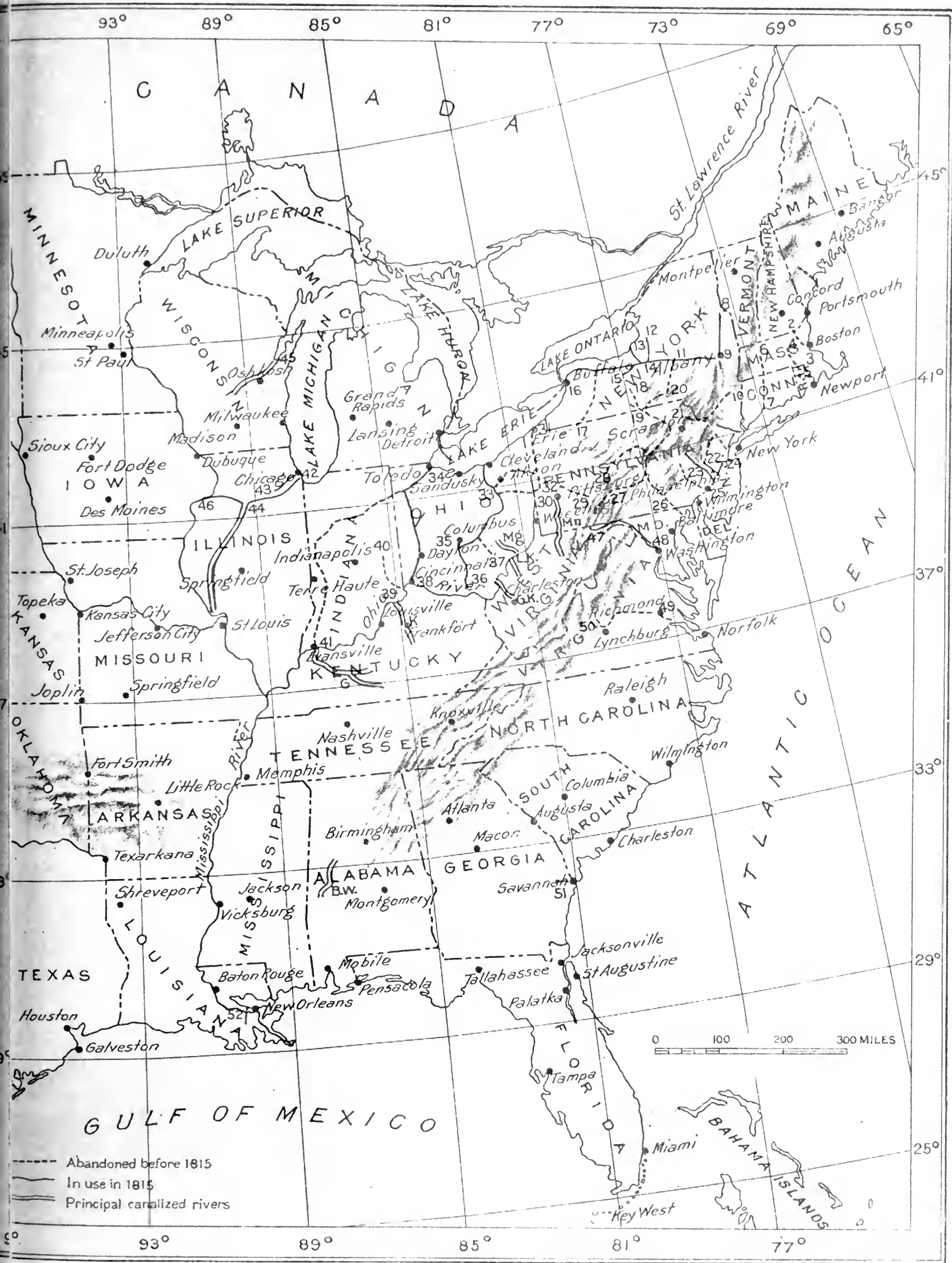
The building of canals and railroads by extending the markets for farm products played a leading part in the expansion and transformation of agricultural production between 1840 and 1860. The access to new markets gave a great stimulus to commercial agriculture and tended to break down the traditional habits of self-sufficient farming. Of particular significance was the extension of railroads. In 1840 the era of railroad building had but just begun. Twenty years later the northern States east of the Mississippi River were traversed by a network of railroads, affording new means of communication and new markets to farmers in both East and West.

THE ERIE CANAL—CANAL BUILDING IN THE WEST 1830 TO 1850.

The early movement for better internal communication and wider markets dating from about 1820 had resulted in the construction of a large number of turnpikes and a few canals. As far as northern agriculture was concerned, the chief accomplishment before 1840 was the Erie Canal, which was designed to give the productive western region a new outlet to the Atlantic Coast. Before the period of canal construction, the only outlet for western produce had been by flatboat or steamer down the Ohio and Mississippi Rivers or overland by road to the Atlantic seaboard. The benefits of the southern market were reflected in the early prosperity of the agricultural regions of the West along the Ohio and Mississippi Rivers and their tributaries. But for the vast territory between the Great Lakes and the Ohio River there was as yet no outlet to the East and South. Long before Cleveland, Chicago, and Milwaukee had developed as lake ports, Cincinnati and St. Louis were thriving western shipping-points.

When the Erie Canal was completed in 1825, giving a water-route from the Atlantic to the Great Lakes, freight rates dropped from \$100 a ton to \$15 or \$25. The region of the Great Lakes was now open to settlement. In 1832 the completion of the Ohio Canal from Portsmouth on the Ohio River to Cleveland opened the central part of the State and gave Ohio a short route to New York. In 1834 the opening of the water and rail route through Pennsylvania connected Pittsburg with Philadelphia. Eleven years later the Miami Canal connected Cincinnati with the East by way of Toledo and the Erie Canal. The Illinois and Michigan Canal, connecting the Illinois River with Lake Michigan, and the Wabash Canal, connecting the Wabash River with Lake Erie, were both completed before 1851. (Fig. 62.) The Canadian government built the Welland Canal in 1833, and the locks at Sault St. Marie were finished in 1855, thus removing the last obstacle in the way of navigation from the western end of the Great Lakes to the Atlantic seaboard.¹ By

¹ Johnson, et al., *Hist. of Domestic and Foreign Commerce of the U. S.*, I, p. 227.



Key to Termini of Canals and Names of Canalized Rivers.

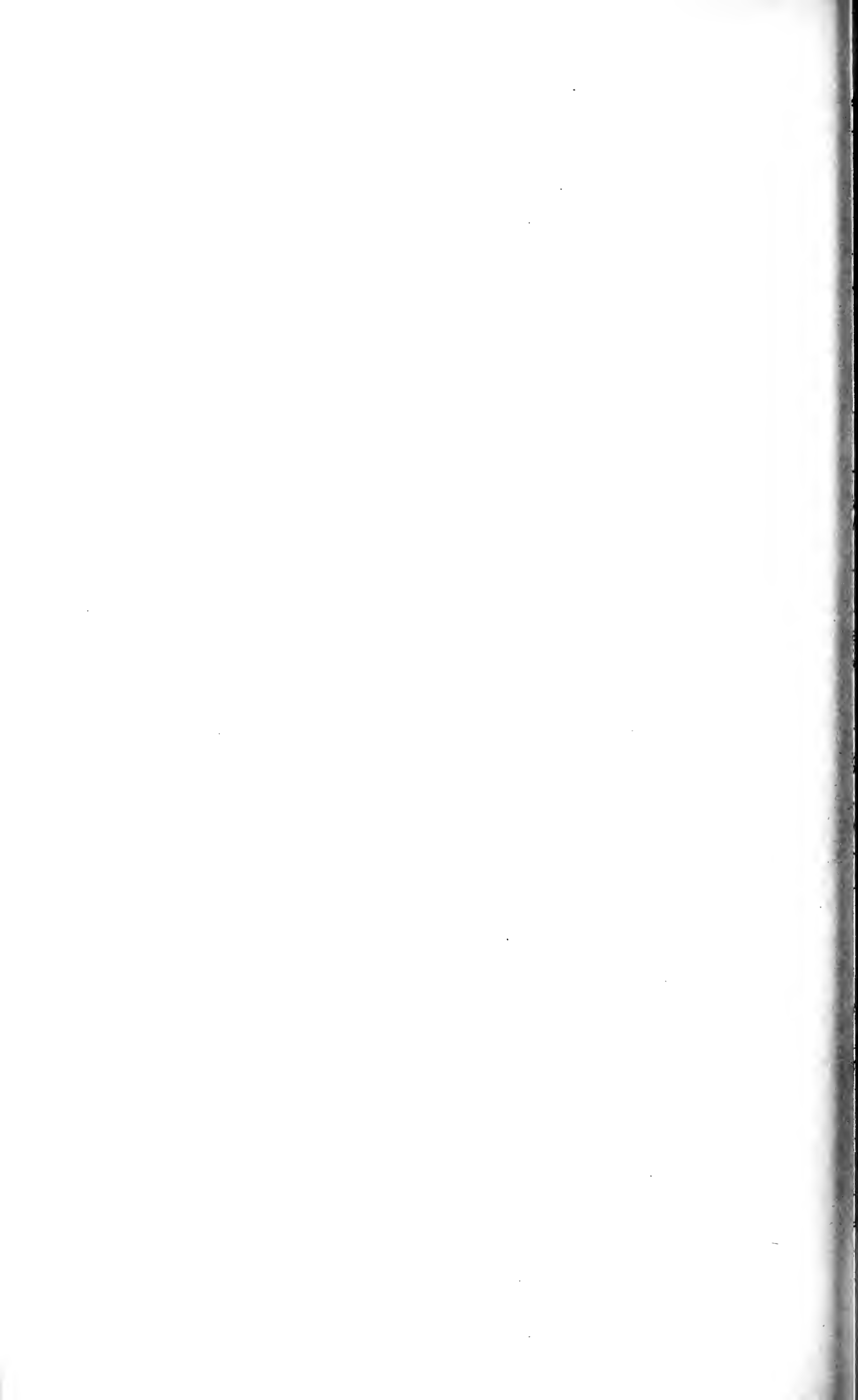
1. Portland
2. Lowell
3. Boston
4. Worcester
5. Providence
6. Northampton
7. New Haven
8. Whitehall
9. Albany
10. Kingston
11. Utica
12. Lyons Falls
13. Oswego
14. Rome
15. Rochester
16. Buffalo
17. Olean
18. Watkins
19. Elmira
20. Binghamton
21. Honesdale
22. Mauch Chunk
23. Easton
24. Jersey City
25. Philadelphia
26. Columbia
27. Hollidaysburg
28. Bellefonte
29. Johnstown
30. Pittsburg
31. Erie
32. Beaver
33. Akron
34. Toledo
35. Columbus
36. Portsmouth
37. Athens
38. Cincinnati
39. Lawrenceburg
40. Cambridge City
41. Evansville
42. Chicago
43. Lockport
44. LaSalle
45. Green Bay
46. Rock Island
47. Cumberland
48. Washington
49. Richmond
50. Buchanan
51. Savannah
52. New Orleans

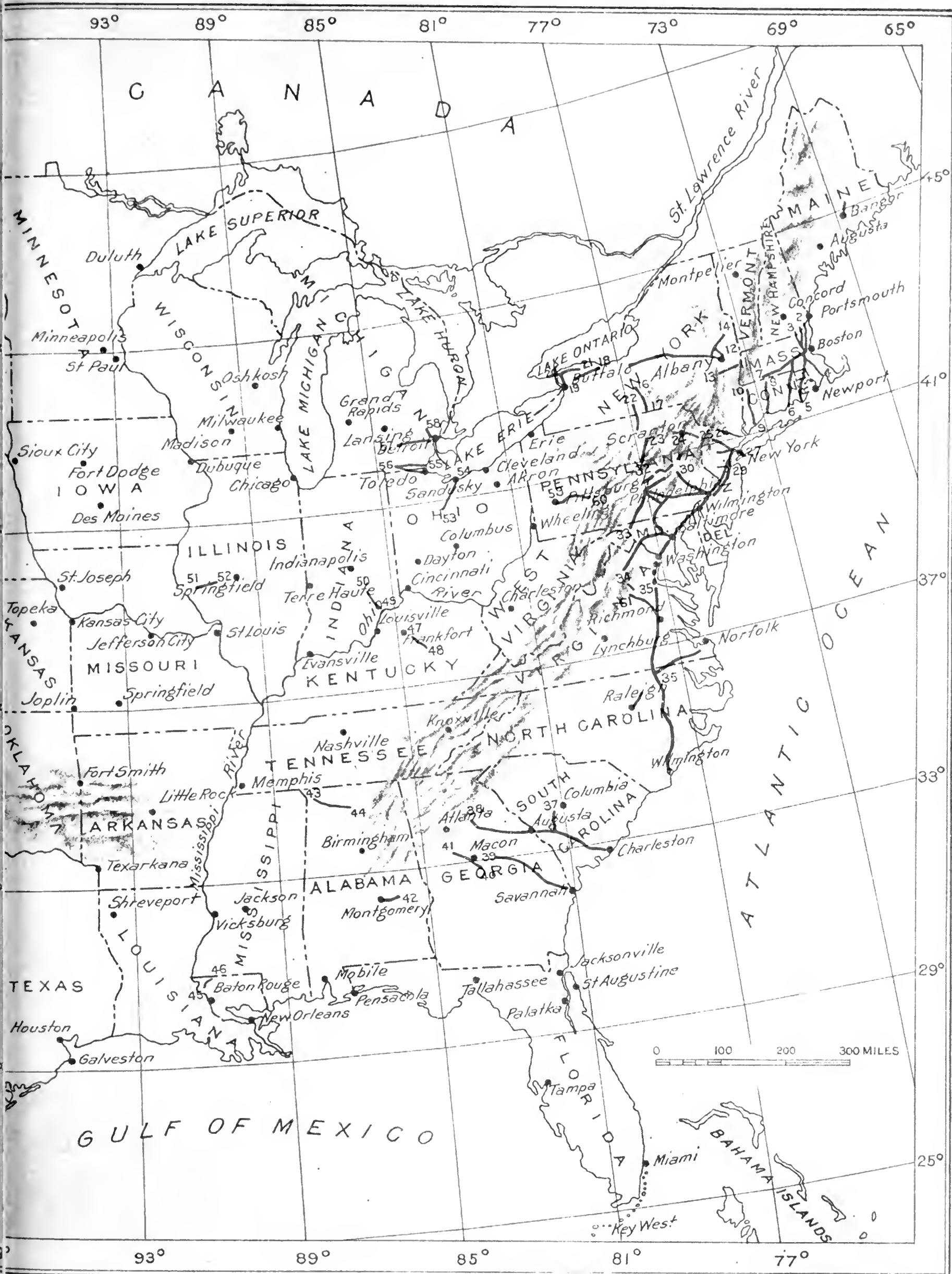
Canalized Rivers.

- B. W., Black Warrior
- G., Green
- G. K., Great Kanawha
- K., Kentucky
- L. K., Little Kanawha
- Mg., Muskingum
- Mn., Monongahela

FIG. 62.—CANALS IN THE UNITED STATES

(Adapted from Meyer, *History of Transportation in the U. S.*, Plate 2.)





*Termini of Railroads,
1840.*

1. Orono
2. Exeter
3. Nashua
4. New Bedford
5. Stonington
6. Norwich
7. Springfield
8. Hartford
9. Bridgeport
10. New Milford
11. State Line
12. Troy
13. Hudson
14. Saratoga Springs
15. Schenectady
16. Ithaca
17. Owego
18. Rochester
19. Batavia
20. Niagara Falls and
Lewiston
21. Lockport
22. Corning
23. Blossburg
24. Carbondale
25. Honesdale
26. Morristown
27. Hicksville
28. Plainfield
29. South Amboy
30. Reading
31. Ralston
32. Williamsport
33. Hagerstown
34. Winchester
35. Fredericksburg
36. Weldon
37. Orangeburg
38. Madison
39. Tennille
40. Macon
41. Barnesville
42. Franklin
43. Tuscumbia
44. Decatur
45. Port Hudson
46. Clinton
47. Frankfort
48. Lexington
49. Madison
50. Vernon
51. Meredosia
52. Jacksonville
53. Carey
54. Sandusky
55. Monroe
56. Adrian
57. Ann Arbor
58. Birmingham
59. Johnstown
60. Hollidaysburg
61. Gordonsville

FIG. 63.—RAILROADS OF THE UNITED STATES IN OPERATION IN 1840

(Adapted from Meyer, *History of Transportation in the U. S.*, Plate 3.)





Fig. 64.—RAILROADS OF THE UNITED STATES IN OPERATION IN 1850
 (Adapted from Meyer, *History of Transportation in the U. S.*, Plate 4.)

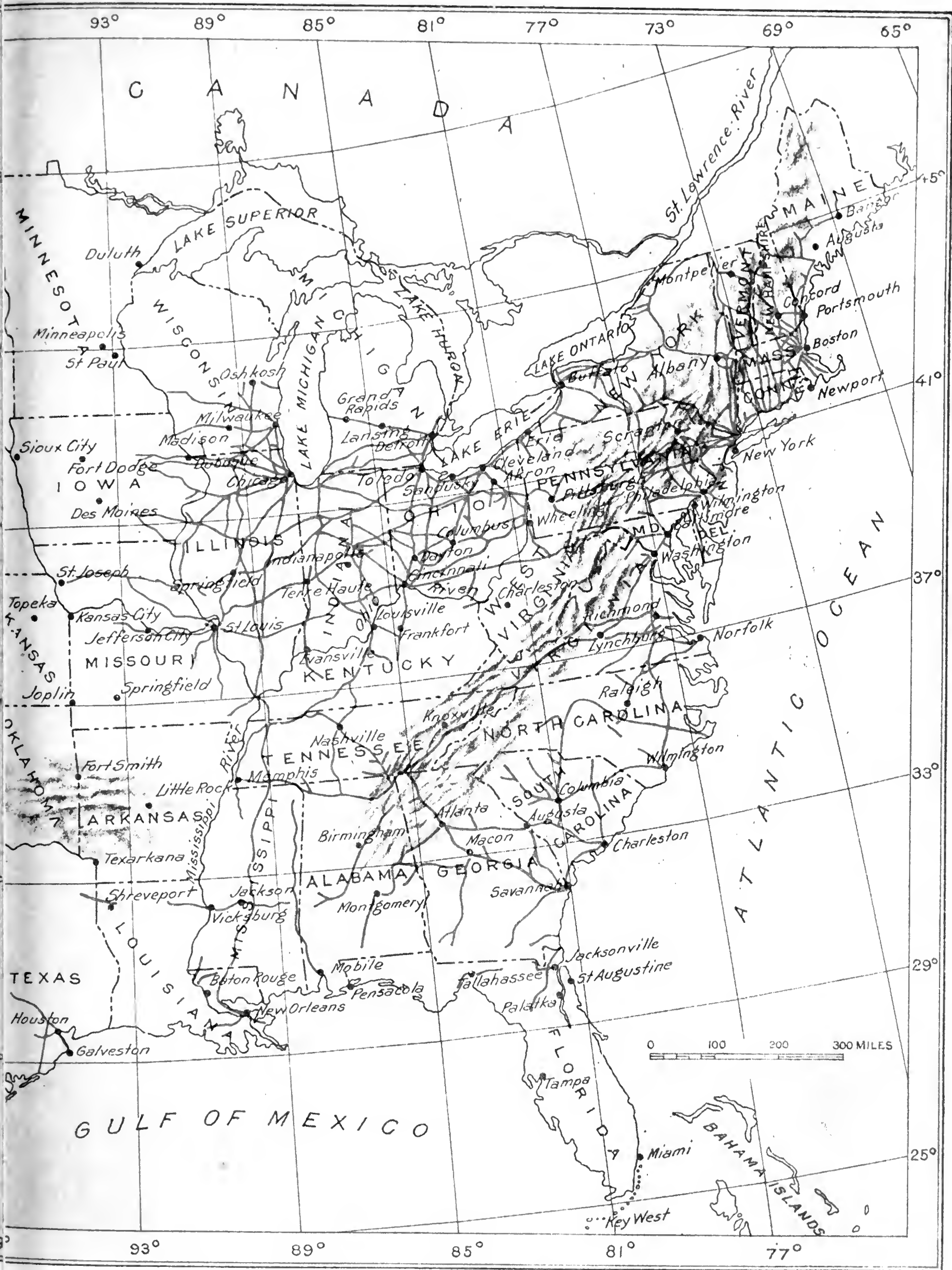
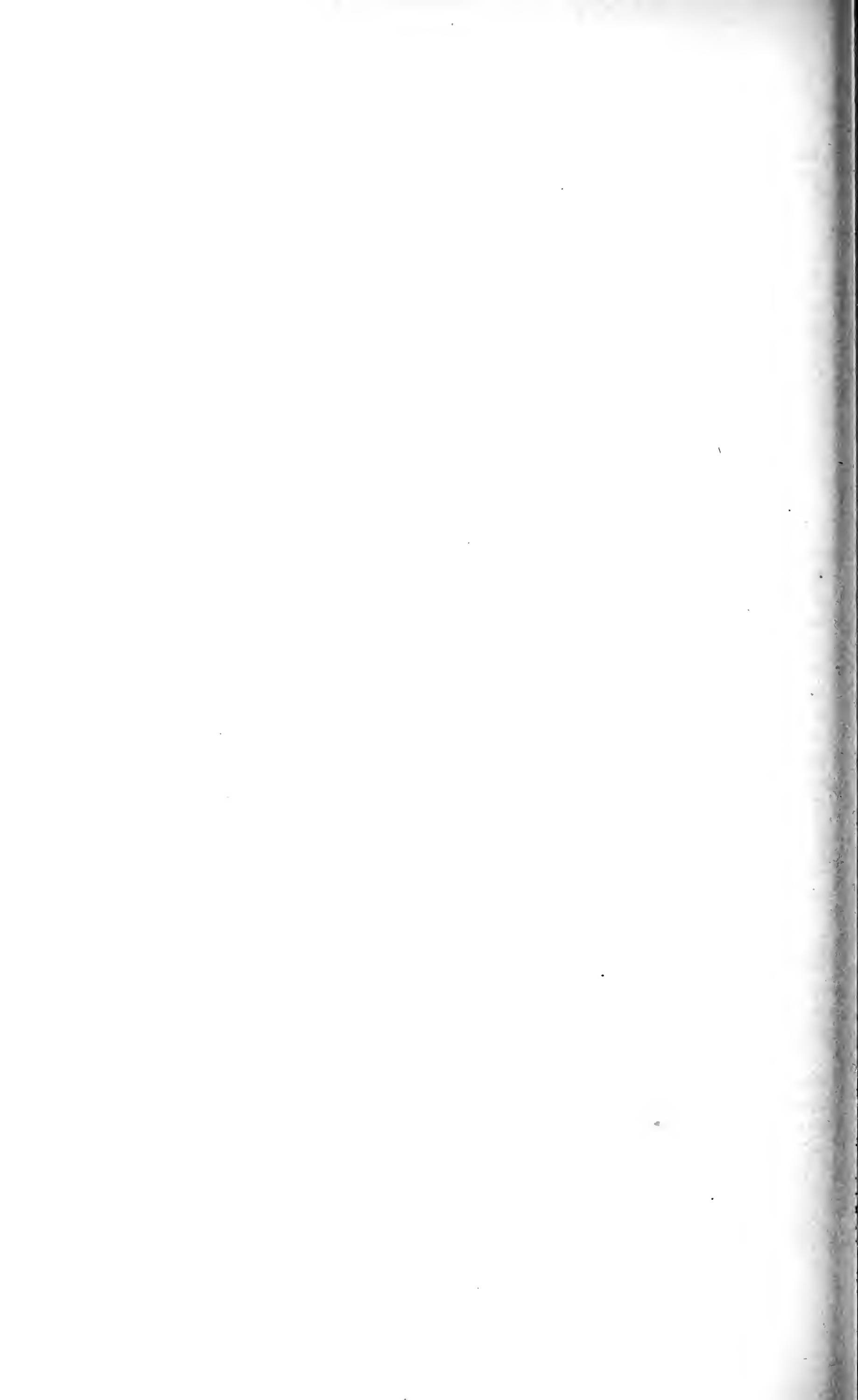


FIG. 65.—RAILROADS OF THE UNITED STATES IN OPERATION IN 1860
 (Adapted from Meyer, *History of Transportation in the U. S.*, Plate 5.)



1840 freight began to move east and west, as well as north and south, according to the condition of the market.

BEGINNING OF GRAIN TRADE ON THE LAKES.

As late as 1835, Ohio was the only grain-exporting territory on the Great Lakes. A year later the first shipment of grain was made from Lake Michigan, "when the brig John H. Kenzie took on board at Grand Haven, Michigan, 3,000 bushels of wheat for the port of Buffalo." The first shipment of grain from the west shore of Lake Michigan consisted of 39 bags sent from Chicago in 1838. In 1845, 133,000 bushels were shipped from Chicago; in 1848, after the opening of the Illinois Canal, 1,066,000 bushels were shipped. It was not until 1841 that the movement of grain from Wisconsin began with the shipment of about 4,000 bushels of wheat from Milwaukee.²

RAILROAD BUILDING AND ITS RESULTS.

During the forties, steamboats, turnpikes, and canals furnished transportation for western produce, but these means were entirely inadequate. (Fig. 63.) The railroads played the chief part in the extension of markets and the development of new territory during the period from 1840 to 1860. There were only a little more than 2,000 miles of railroad in the United States in 1840, three-fourths of which lay north of Virginia and east of Ohio. By 1850 the mileage had increased to more than 7,000, over one-half of which was in the northeastern States and less than 800 miles in the northwestern.³ Boston was connected with the Erie Canal at Albany by railroad in 1841. The first railroad in Ohio, about 30 miles in length, extending from Toledo northward into Michigan was finished in 1836.⁴ The decade 1850 to 1860 witnessed rapid railroad extension and improvement. The situation in 1851 is thus described by McMaster:⁵

"During 1851 more than twenty-one hundred miles of railroad were built and a new era opened. The day of short roads joining the termini of steamboat navigation on neighboring rivers, or some important nearby cities or towns was gone, and the day of the trunk line was dawning."

In 1850 the New York Central made a through connection with the Great Lakes. The Pennsylvania Railroad was opened to Pittsburg in 1852; in the following year the Baltimore and Ohio reached Wheeling. Chicago was connected with New York by railroad in 1852,⁶ and in 1854 the Mississippi was reached.⁷ By 1860 railroads had extended beyond the Mississippi into eastern Iowa and had reached the western frontier of agricultural production.

In the five states of Ohio, Indiana, Illinois, Michigan, and Wisconsin there were in 1860 approximately 9,500 miles of railroad. (Fig. 65.) The total for the entire country was 30,626 miles. Of the exports from Chicago in 1858, \$21,000,000 worth was sent by lake vessels, \$1,000,000 worth by canal,

² *U. S. Census of 1860, Agriculture*, p. cxlvi.

³ *Am. Statistical Annual* (1854-55), p. 146.

⁴ *Niles Register*, LI (1836), p. 272.

⁵ *History of the People of the United States*, VIII, 89.

⁶ Meyer, *History of Transportation in the United States*, 511.

⁷ *Ibid.*, 512, 513.

and \$60,000,000 worth by railroad.⁸ 20 per cent of the flour, 70 per cent of the packing-house products, and all of the livestock were shipped by rail, while nearly all the wheat went by way of the lakes. Of the livestock received at Chicago in that year all the hogs came by railroad; of the 140,000 cattle received, 9 animals came by way of the lake, 21,000 were driven in, and the remainder came by railroad.⁹ It was estimated in 1862 that two-thirds of the freight to and from the West was moved by railroads.¹⁰

MARKETS.

The markets of this period were mainly domestic. The development of trade and manufacturing in the East and the expansion of specialized agriculture, cotton, sugar, and rice planting, in the South created large markets in those regions for the surplus produce of the North. The California migration after 1849 opened an important market for the upper Mississippi region. In Maine, Michigan, and Wisconsin the lumber camps furnished a considerable market, while in the West the demands of newly arrived immigrants created a local market. The Eastern States were consuming western wheat, corn, pork, and beef before 1840. The industrial communities provided a home market also for food products of the eastern farmer. In the newly-settled West the question of finding an outlet for the surplus products was uppermost in 1840. There were thus far two main outlets for this surplus, one down the Mississippi River, the other through the Erie Canal to the East.

COMPETITION OF SOUTHERN AND EASTERN MARKETS FOR WESTERN PRODUCE.

Down the Mississippi River by flatboat or steamer was the main outlet for the surplus products of the early settlers. In 1840, Cincinnati, Louisville, Pittsburg, and St. Louis were the important commercial centers of the West. Cincinnati was widely known, both at home and abroad, as the pork-packing center of America. It was not until after 1850 that the number of hogs packed at Chicago exceeded the number packed at Alton, Beardstown, Peoria, and other Illinois towns for the southern market.¹¹

While the Erie Canal carried each year an increasing volume of surplus food products to the Atlantic seaboard from the West, the shipments of flour, grain, and provisions down the Ohio and Mississippi Rivers also steadily increased. In 1840 the products of the Ohio Valley up as far as Wheeling went south. The rivalry of the eastern canals and waterways was not felt at Cincinnati until 1850, when the railroads began to compete for the traffic in flour and provisions. In the three years ending August 31, 1852, Cincinnati shipped down the river, 1,091,000 barrels of flour, while to the North and East were sent 37,600 barrels. Of the latter, only 10,400 barrels went by canal and railroads.¹² In the three years ending August 31, 1860, there were shipped

⁸ Chicago Board of Trade, *Annual Report* (1858), p. 6.

⁹ *Ibid.*, 8, 26.

¹⁰ U. S. Census of 1860, *Agriculture*, p. clxvi.

¹¹ *Alton (Ill.) Telegraph* (1849), p. 2.

¹² Cincinnati Chamber of Commerce, *Annual Report* (1852), p. 13.

down the river 300,000 barrels of flour, while to the North and East were sent 1,376,000 barrels, and of these 890,000 barrels went by canal and railway.¹³

By 1855 the value of the total exports from Cincinnati to the East was nearly equal to the value of its exports to the South,¹⁴ and in 1860 practically all the wheat shipped from Cincinnati was sent north and east.¹⁵ The shift in the pork and bacon trade of Cincinnati was similar to that in flour. In the three years ending August 31, 1852, there were shipped down the river in barrels and hogsheads, 551,000 barrels of pork and bacon; for the three years ending August 31, 1860, these shipments amounted to only 234,000 barrels.¹⁶ In 1850 St. Louis outranked Cincinnati as a southern shipping-point. An increasing portion of the supplies going south came from points on the Missouri River. The shipments from Cincinnati went north and east.¹⁷

Of the products sent down the Mississippi River a considerable portion was consumed on the cotton and sugar plantations. From 1830 to 1860 the cultivation of cotton had proven so profitable in the South that the planters of the Cotton Belt were putting all their land into cotton culture and securing from the North much of the livestock, feed, and food needed on the plantation. In 1845 it was estimated that in the preceding 20 years southern planters had expended \$900,000,000 in the North for horses, mules, cattle, sheep, hogs, hay, and farm equipment.¹⁸ The grain, flour, packing house products, and dairy products were sent south on the river, but the trade in livestock was overland. Each year large droves of horses, mules, cattle, and hogs were driven south from the border States. The old "cowpens" of the South, which had begun to fall into decay and disuse after the Revolution, acquired a new lease of life. They were used as stock-stands for the accommodation over night of hog-drivers from the North, who came through each season with thousands of animals. It was said in 1841 that 10,000 horses and mules were driven from the Middle Atlantic and Western States every year into the South, to stock the plantations there.¹⁹

WESTERN PRODUCTS EXPORTED FROM SOUTHERN PORTS.

Not all the products sent down the Mississippi River during this period, however, were consigned for consumption in the Southern States; a considerable portion was exported to coastwise or foreign ports. During the three years 1843 to 1845, 1,874,000 barrels of flour were received at New Orleans, and of this number about 721,000 barrels were for southern consumption. Shipments to foreign countries, Cuba included, were 505,000 barrels. The remainder, 648,000 barrels, went to coastwise ports; 469,000 barrels went to New York and Boston alone. During the same years 847,000 barrels of pork and 58,000 casks of bacon were sent to coastwise or foreign ports from New

¹³ *Ibid.*, (1860), p. 44.

¹⁴ *Ibid.*, (1856), pp. 25, 29; Johnson, et al., *History of Domestic and Foreign Commerce of the United States*, I, 245; *Internal Commerce of the United States*, U. S. Bureau of Statistics (1882), App. 7, p. 83.

¹⁵ Cincinnati Chamber of Commerce, *Annual Report* (1860), p. 44.

¹⁶ *Ibid.*, (1852), p. 13; (1860), p. 44.

¹⁷ *U. S. Census of 1860, Agriculture*, p. clvii.

¹⁸ Ingle, *Southern Sidelights*, 55 et seq.

¹⁹ Buckingham, *Slave States*, II, 203.

Orleans.²⁰ After 1850 the shipment of packing-house products from New Orleans decreased. Flour shipments continued much as during the preceding decade, the supply being drawn largely from Missouri River points. Considering the entire domestic grain trade, however, it may be said that by 1860 the Mississippi River as an outlet to the ocean for the trade of the West was becoming relatively less important. Canals and railroads were now carrying the surplus to the East.

TABLE 36.—Shipments from New Orleans of certain farm products for the year ending August 31, 1859.^a

Destination.	Commodities.					
	Flour.	Pork.	Bacon.	Lard.	Beef.	Corn.
	<i>bbls.</i>	<i>bbls.</i>	<i>casks.</i>	<i>kegs.</i>	<i>bbls.</i>	<i>sacks.</i>
New York	71,286	10,231	1,820	117,479	5,713	12,819
Boston	247,516	35,435	2,122	74,581	6,357	7,415
Philadelphia	3 062	40	.....	.....	40	.....
Baltimore .....	.....	.....	300	.....	.....	.....
Other coast ports.....	165,397	31,547	25,147	22,012	1,720	106,138
Total coastwise shipments	487,261	77,253	29,389	214,072	13,830	126,372
Great Britain	6,469	642	.....	63,199	4,877	1,000
Cuba	4,052	1,290	2,130	187,190	1,450	7,980
Other foreign ports.....	107,778	3,679	358	34,855	1,656	40,231
Total foreign shipments.	118,299	5 611	2,488	285,244	7,983	49,211
All shipments	605,560	82,864	31,877	499,316	21,813	175,583

^a *De Bow's Review*, XXVII (1859), p. 479.

GROWTH OF THE GRAIN TRADE OF BUFFALO AND CHICAGO.

After 1836 the growth of the grain trade to the East via the Great Lakes and the Erie Canal was rapid. The Mississippi River was no longer the sole outlet for the Great Valley. Of the wheat and flour shipped from Ohio in 1845, 700,000 barrels were loaded at ports on Lake Erie and 220,000 barrels were sent from Ohio River points.²¹ Receipts at Buffalo on the western end of the Erie Canal give a valuable index of the growth of the lake traffic in grain and flour. In 1836, 1,239,000 bushels of grain and flour entered the city from the west; in 1851 the figure was 17,741,000 bushels, and in 1860, 37,053,000 bushels.²² "As early as 1838 the receipts of wheat and flour at Buffalo exceeded those at New Orleans."²³ At first the grain received at Buffalo came from Ohio, but as settlement and the railroads expanded into Michigan, Indiana, Illinois, Wisconsin, and Iowa, the sources of the grain-supply moved further west. Chicago shipped 78 bushels of grain in 1838, 1,831,000 bushels in 1850, and 31,109,000 bushels (grain and flour equivalent) in 1860.²⁴ In

²⁰ *De Bow's Review*, II (1846), p. 422.

²¹ U. S. Patent Office, *Annual Report*, 1845, p. 367.

²² Buffalo Board of Trade, *Annual Report* (1869), p. 20.

²³ U. S. Census of 1860, *Agriculture*, pp. cxlviii, clvi; Johnson, et al., *History of Domestic and Foreign Commerce of the United States*, I, p. 231.

²⁴ Chicago Board of Trade, *Annual Report* (1867), p. 35.

1860 the shipments of grain from all the ports on Lake Michigan amounted to 43,211,000 bushels.²⁵ In 1862 the Chicago hog pack passed the half million mark, and from that date Chicago led Cincinnati as the western packing center.²⁶ By 1858 the movement of flour and grain to the latter port for shipment southward had become of relatively small importance.

After 1850 through traffic to the east over the railroads increased rapidly in volume and another artery of trade leading from the west to the east was opened. By 1860 the railroads were carrying practically all of the livestock and two-thirds of the flour traffic to the East,²⁷ but the total traffic over the four trunk lines was not yet as large as that passing through the Erie Canal.²⁸ One of the advantages of the railroads over the canals as a means of marketing lay in their availability during all the year. Formerly, grain, butter, and wool were sent east only during the season of canal navigation; livestock could not be driven east during the winter months. After the railroads began to carry freight, a year-round market was available to the western farmer.

THE EASTERN MARKET FOR WESTERN PRODUCTS.

By 1860 the eastern industrial States provided the leading market for the surplus products of the West. The development of manufacturing and commerce resulted in the growth of cities and an increase in population wholly dependent upon the farmer for food. As wheat and pork became cheaper, the New Englander consumed more, while the eastern farmer produced less. In 1840, receipts of flour at Boston amounted to 530,000 barrels and in 1850 to 761,000 barrels,²⁹ an increase of nearly 50 per cent. At the same date, railroads from the West, also, were distributing large quantities of flour in the interior. Somewhat later we find that over one-third of the flour shipped from Albany and Troy over the Western Railroad did not reach Boston.³⁰ In the twenty years from 1840 to 1860 the deficit of New England in wheat increased from 8,000,000 to 13,000,000 bushels. The States along the Atlantic coast, which in 1840 produced a little more than enough to supply their own needs, by 1859-60 had a deficit of nearly 15,000,000 bushels, an amount greater than that which was exported. The New England States which were producing 1 bushel of wheat per capita in 1840 produced only one-third of a bushel in 1860. New York and Pennsylvania, which raised 6 bushels per capita in 1840, were producing only 3 bushels in 1860, as a result both of decreased production and increase in population. The Western States, on the other hand, were raising 7.4 bushels of wheat per capita in 1840 and 13.3 bushels in 1860. Of corn, the Western States were producing 33 bushels per capita in 1840 and 45.7 bushels in 1860. What was true of wheat and corn was likewise true of beef and pork products. Thus there was rapidly developing that close dependence between East and West, whereby the West furnished a market for the capital and manufactured products of the East, while the East provided a growing market for the farm products of the West.

²⁵ *U. S. Census of 1860, Agriculture*, p. cl.

²⁶ Chicago Board of Trade, *Annual Report* (1862), p. 32.

²⁷ *U. S. Census of 1860, Agriculture*, p. clvii.

²⁸ Johnson, et al., *History of Domestic and Foreign Commerce of the U. S.*, I, p. 238.

²⁹ Boston Board of Trade, *6th Annual Report* (1860), p. 63.

³⁰ *Ibid.*, *2d Annual Report* (1856), p. 55.

EXPORT MARKETS.

Comparatively little was exported except during the middle years of the decade 1850-1860. Hog products, cheese, tallow, and corn showed considerable increases in the amounts exported during the decade 1840-1850. The Irish famine in the late forties greatly tended to encourage the exportation of grain to the United Kingdom. During the next decade, in the years 1854 to 1856, the exportation of nearly all foodstuffs rose to the highest points yet reached,³¹ owing to the high prices accompanying the Crimean War. The value of the exports of hogs and hog products rose from \$4,368,000 in 1851 to \$12,771,000 in 1856.³²

TABLE 37.—Exports of breadstuffs.^a

Year.	Value of exports of breadstuffs.	Year.	Value of exports of breadstuffs.	Year.	Value of exports of breadstuffs.	Year.	Value of exports of breadstuffs.
1840	\$13,535,926	1845	\$7,445,820	1850	\$13,066,509	1855	\$21,557,854
1841	10,254,377	1846	16,625,407	1851	14,556,236	1856	56,619,986
1842	9,878,176	1847	53,262,437	1852	17,256,803	1857	55,624,832
1843	5,249,600	1848	22,678,602	1853	21,875,878	1858	33,698,490
1844	8,931,396	1849	22,895,783	1854	48,383,107	1859	24,893,413

^a U. S. Census of 1860, *Agriculture*, p. cxli.

PRICES—EXPLANATION OF WIDE GEOGRAPHIC VARIATIONS.

A most interesting characteristic of the prices of farm products was the wide variation in the prices prevailing at any time throughout the country (charts, pp. 313-315). In the East, nearness to market made prices relatively high, while in the West lack of markets and abundance of productive territory made them relatively low. Within the Eastern States themselves there was a similar variation in prices, according to location. Northern New Hampshire was relatively farther from the Boston market in 1840 than Wisconsin is to-day. With the extension of railroads, however, the markets of the industrial and export centers were made accessible to broader areas of agricultural production, and the farm price of products in the interior tended to approach the New York price. During the year 1843, the Cincinnati price of hogs averaged \$2.04 per hundred, while at New York the average price was \$4.33. Wheat during the two years 1847 and 1848 at New York averaged \$1.31 per bushel; the Chicago price was \$0.70, a difference of \$0.61 per bushel. During the two years 1857 and 1858 the New York price averaged \$1.32 per bushel, the Chicago price, \$0.90, a difference of \$0.42 per bushel.³³ Before the era of railroads wheat was frequently sold in the interior counties of the West as low as 37 cents and corn at 10 cents per bushel.³⁴ Farther

³¹ U. S. Census of 1860, *Agriculture*, p. cxli.

³² U. S. *Commerce and Navigation*, 1851, p. 15; (1856), pp. 16-19. For a discussion of foreign and domestic trade of this period, see Johnson et al., *History of Domestic and Foreign Commerce of the United States*, I, ch. XIV; II, ch. XXIV.

³³ *Aldrich Report U. S.*, 52nd Cong., 2d sess., Senate Report No. 1394 (1893), part 2, pp. 27, 28, 60-63.

³⁴ U. S. Census of 1860, *Agriculture*, p. clxviii.

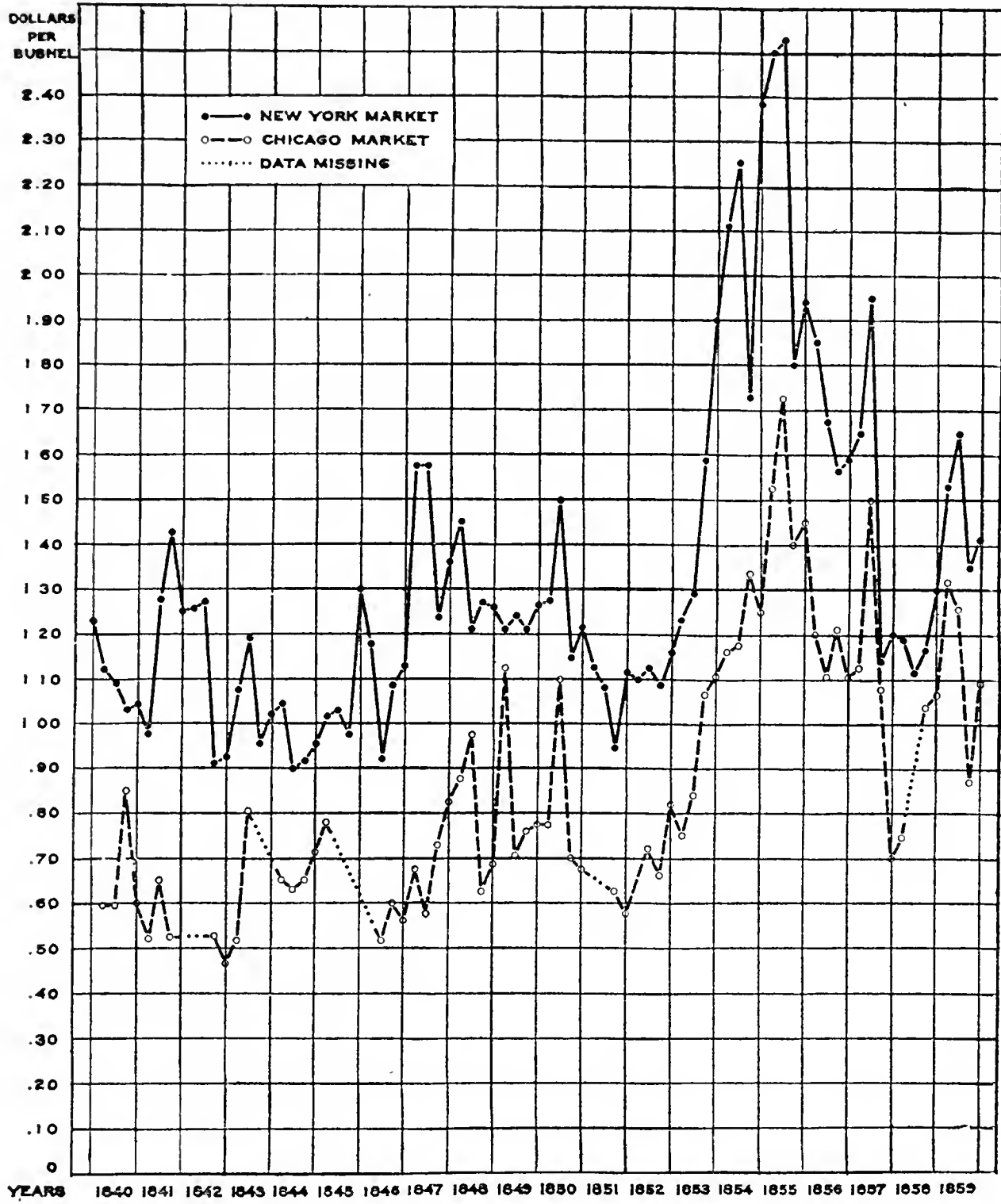


FIG. 66.—Price of wheat, 1840-1859.

During the early years the price of wheat in Chicago was fairly independent of that in New York. The years 1854, 1855, and 1856, brought relatively high prices to the wheat farmer in both East and West.

inland, grain was not worth hauling to market. In January 1845, corn was quoted in New York at 48 cents per bushel, in Chicago at 35 cents, at LaFayette, Indiana, on the Wabash Canal, with outlet to New Orleans or the Erie

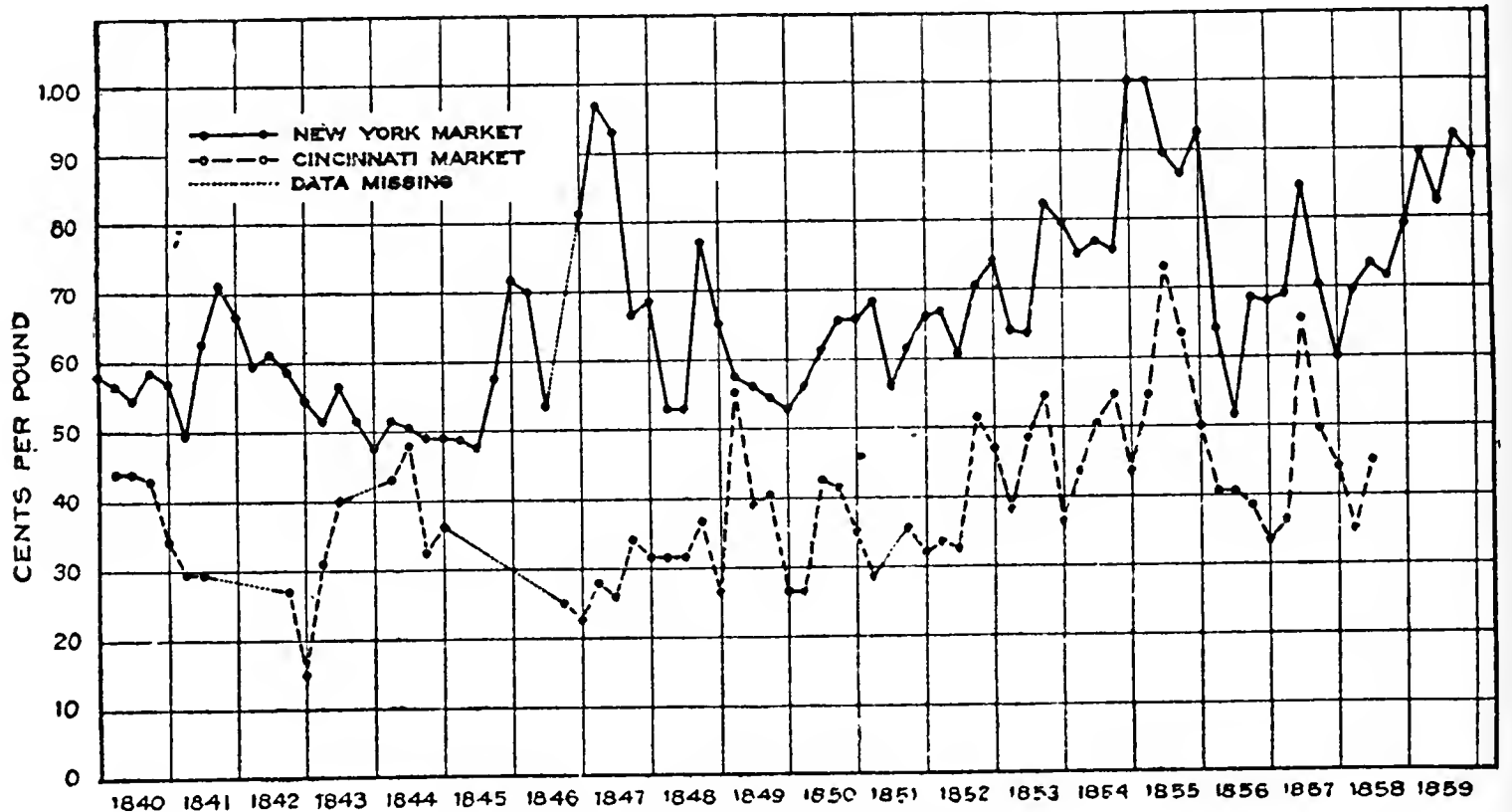


FIG. 67.—Price of corn, 1840–1859.

The year 1845 marked the beginning of a considerable rise in the price of corn. Until about 1850 the price of corn fluctuated more or less independently on the New York and Cincinnati markets.

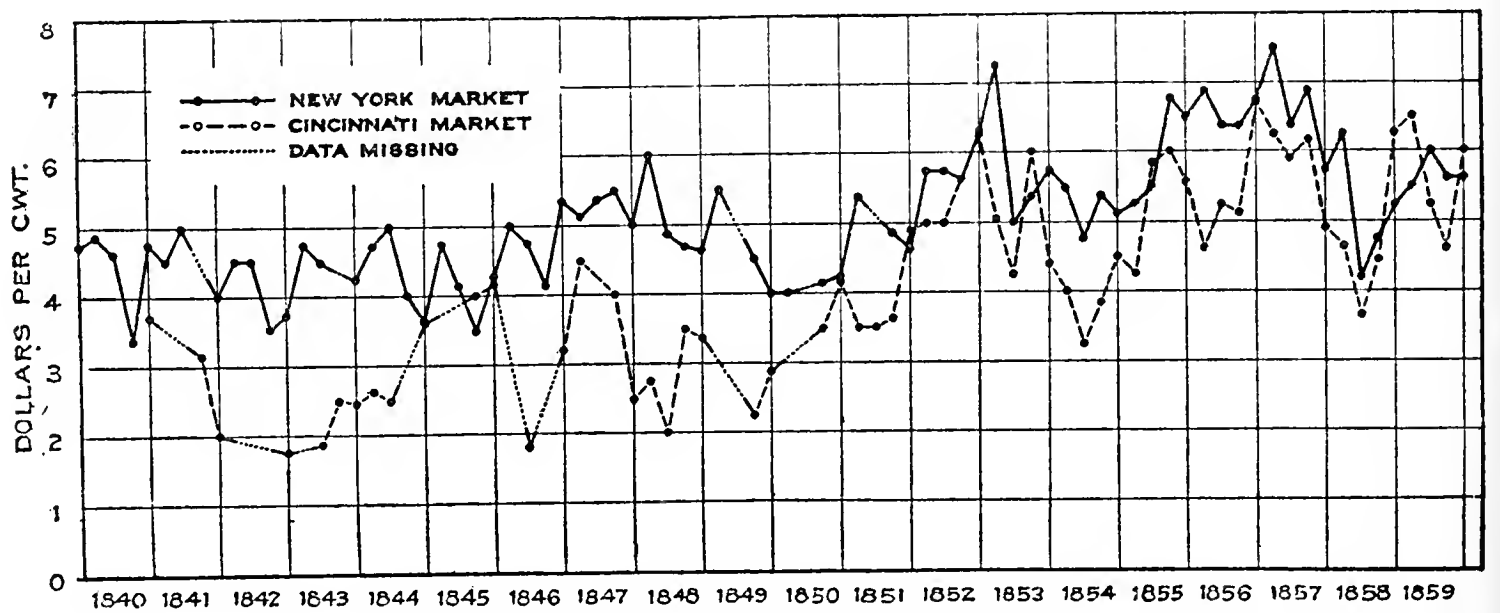


FIG. 68.—Price of hogs, 1840–1859.

The price of hogs rose in 1846 and again after 1850. As with corn, New York and Cincinnati prices were more or less independent until about 1850.

Canal, as low as 20 cents per bushel.³⁵ In Shelby County, Indiana, 85 miles from Cincinnati, without water or rail transportation, the cost of hauling by wagon was said to be so heavy as to prohibit the cultivation of corn or wheat beyond the necessity for home consumption or to feed to livestock.³⁶ With

³⁵ U. S. Patent Office, *Annual Report*, 1845, p. 384.

³⁶ Indiana State Board of Agriculture, *Annual Report*, 1851, p. 180.

the extension of railroads and other means of transportation, prices advanced noticeably in regions within the reach of the new facilities.³⁷

Considerable fluctuation of prices occurred during the period 1840 to 1860. (Figs. 66, 67, 68, 69, 70.) In the early forties there was a depression in prices following the panic of 1837. In the East the low prices had led to con-

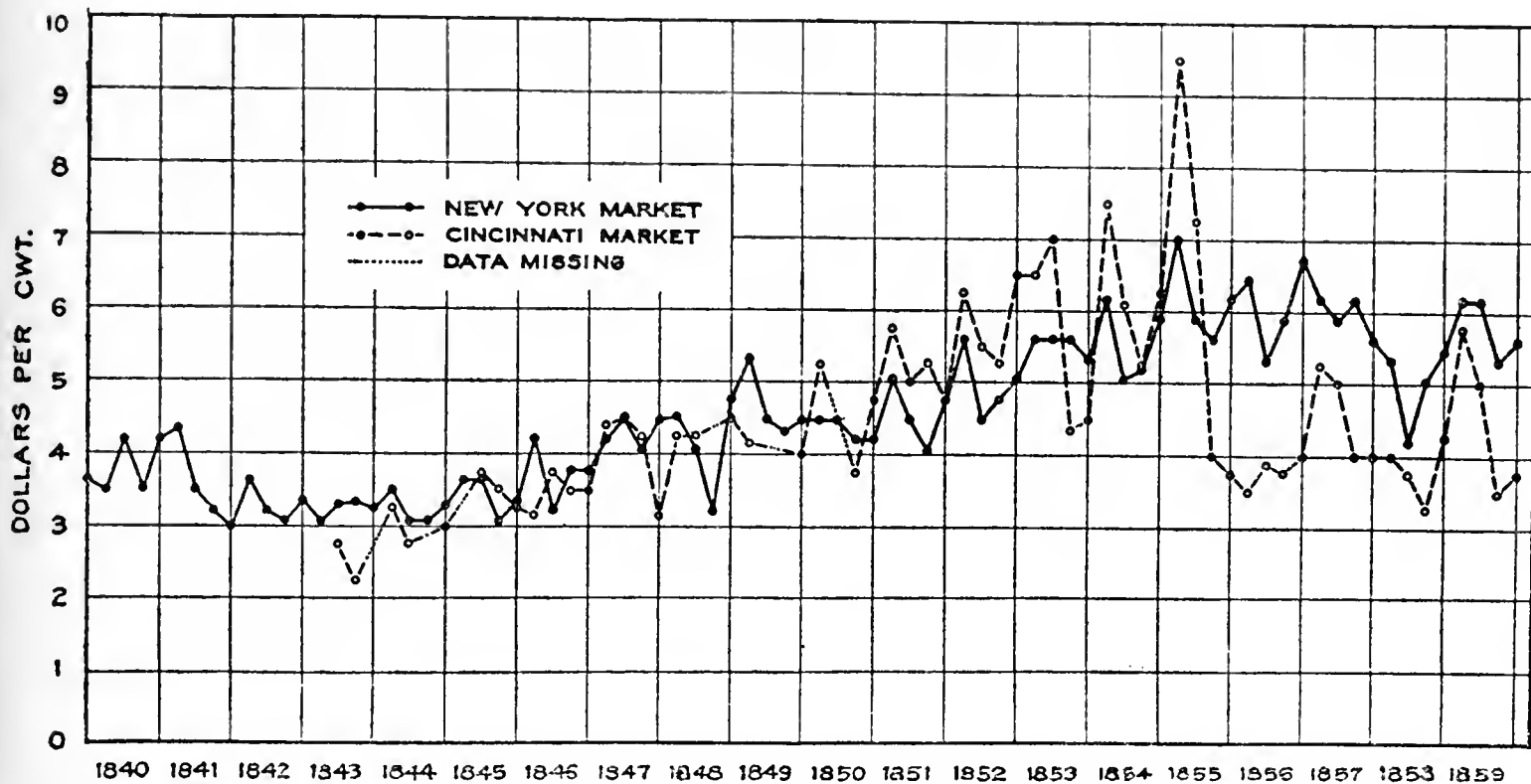


FIG. 69.—Price of Beeves, 1840-1859.

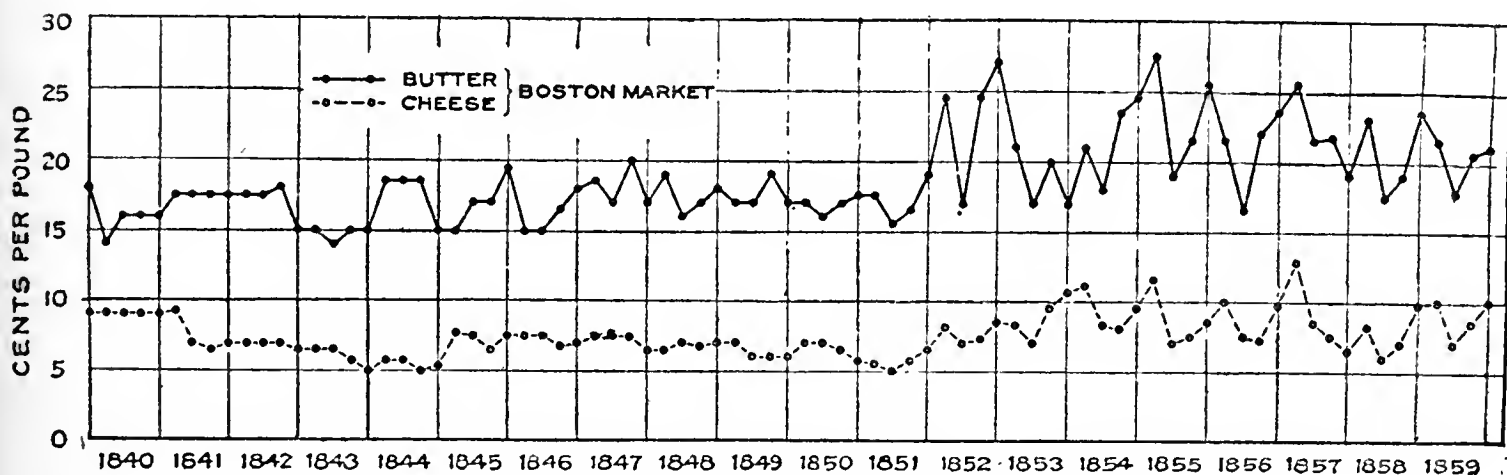


FIG. 70.—Prices of butter and cheese, 1840-1859.

During the fifties the price of butter relative to cheese was higher than in the previous decade.

siderable hardship, especially among wool growers, and in the West it had intensified the difficulty of finding a market. In 1846-47 prices revived considerably in both East and West, and agriculture entered into a period of unusual prosperity. Later, during the middle years of the fifties, the unusual demand for wheat for export markets brought high prices to the farmer who grew wheat. A period of low prices followed the panic of 1857.

³⁷ U. S. Census of 1860, Agriculture, p. clxvii.

CHAPTER XXV.—DIFFUSION OF INFORMATION.

PERIODICALS.

The establishment of the *American Farmer* at Baltimore by Mr. John T. Skinner in 1819 marked the beginning of agricultural journalism in the United States. Under the theory that "knowledge is power," the editor stated in his first issue:¹

"The great aim and the chief pride of the *American Farmer* will be to collect information from every source, on every branch of husbandry, thus to enable the reader to study the various systems which experience has proved to be the best, under given circumstances."

In 1834, after a period of 15 years, the *American Farmer* was discontinued. During this period, several other agricultural papers had been established. A notable one was the *Cultivator*, established in 1834 at Albany by Jesse Buel, under the patronage of the New York Agricultural Society.² *The Plough Boy* (Albany, 1819), *The New England Farmer* (Boston, 1822), *The Genessee Farmer* (Rochester, 1831), *The Farmer's Cabinet* (Philadelphia, 1836), *The Western Farmer* (Cincinnati, 1839), had all been established in the North before 1840, but some of them had only a brief existence. Upon the death of Jesse Buel in 1839, *The Cultivator* was purchased by Luther Tucker, who united it with the *Genessee Farmer*. In 1853 Tucker established *The Country Gentleman* as a weekly, continuing *The Cultivator* as a monthly until its merger with *The Country Gentleman* in 1853. During the decade 1840 to 1850, several other papers were established, *The Prairie Farmer*, which was started at Chicago in 1840, being especially worthy of mention. A number of agricultural papers were established in 1850, and from that time on the development of agricultural journalism was rapid. By 1860 at least 40 papers and magazines devoted almost exclusively to agriculture were published in the country. How widely these papers were circulated and read it would be difficult to determine. It was reported from Oberlin, Ohio, in 1849, that 121 copies of agricultural and horticultural papers were taken at that post-office.³

Besides the periodicals, an increasing number of books treating of agriculture appeared during this period. Some of these, like Ellsworth's *Valley of the Upper Wabash* (1837), and the various guides to the West, purposed to set forth the prospects and conditions of that region. Others, like Buel's *Farmer's Companion* (1839), dwelt upon the advantages of the "New System of Agriculture." It is interesting to note that up to about 1850 many of the volumes treating of agriculture were largely reprints of English works, with the addition, perhaps, of a few pages relating to maize and to machinery. It is significant that the first two pages of the first issue of the *American Farmer* are taken up with a discussion of the culture of the rutabaga, or

¹ *American Farmer*, I (1819), p. 5.

² N. Y. State Agric. Soc. *Transactions* (1841), p. 8.

³ Ohio State Board of Agriculture, *4th Annual Report* (1849), p. 150.

Swedish turnip.⁴ With the agricultural prosperity of the fifties an increasing number of volumes relating to agriculture were published in America.

FEDERAL AID TO AGRICULTURE.

The National Government began to assist in the diffusion of agricultural information during this period. In 1839 Congress appropriated \$1,000 for the "collection of agricultural statistics, investigations for promoting agriculture and rural economy, and the procurement of cuttings and seeds for gratuitous distribution among the farmers, which appropriations were expended under the direction of the Patent Office, the idea having originated with Hon. Henry L. Ellsworth."⁵ Mr. Ellsworth was Commissioner of Patents. His interest in agriculture serves to explain why the Federal agricultural reports were long issued from the Patent Office. In 1851 the annual appropriation was increased to \$5,500, in 1854 to \$35,000, and in 1856, \$105,000 was reached. The first agricultural report printed in 1839 by the Patent Office contained 54 pages; by 1845 it had reached the size of 1,376 pages, the largest report issued during this period. In 1855, 267,920 volumes of the report were issued.⁶ It is of interest, as a sign of the times, that while the early reports had been largely concerned with discussions of agricultural practice, later reports had become interested in such subjects as the *Practicability of Tea Culture in the United States, Proposed Introduction of the Yak Ox from Tartary to the Great Plains of the West, The Production of the Ionian Islands and Italy.*⁷ The first federal census of agriculture was taken in 1840. It was not until 1862 that the national Department of Agriculture was formed.

AGRICULTURAL SOCIETIES.

The history and services of the early agricultural societies have been discussed in a preceding chapter of this work (chap. XIV, p. 184 et seq.). Many of them had become inactive or had passed out of existence before 1840. A new period began with the reorganization of the New York State Agricultural Society in 1841. The formation of county agricultural societies and fairs in that State was fostered through an appropriation by the State Legislature of \$40,000. By the end of the year societies had been founded in 32 New York counties, and in 1842, 42 counties had societies, 35 of which held fairs for the exhibition of farm products, implements, and livestock.⁸

From 1840 to 1846 the formation of agricultural societies was a slow and discouraging task, but with the return of better prices in 1847 a renewed interest was taken in them. In Ohio, although the Hamilton County Agricultural Society had been organized before 1828, little progress was made until State aid was extended in 1846. The first year thereafter societies were organized in 20 or more counties,⁹ and in 1849 they were to be found in more than 50 counties.¹⁰ The Illinois State Agricultural Society was established in 1853,

⁴ *American Farmer*, I (1819), p. 5.

⁵ U. S. Patent Office, *Annual Report* (1857), *Agriculture*, 24.

⁶ *Ibid.*, p. 25.

⁷ *Ibid.*, 166; 1858, p. 239; 1859, p. 100.

⁸ N. Y. State Agric. Soc. *Transactions*, II (1842), p. 294.

⁹ Ohio State Board of Agriculture, *1st Annual Report* (1846), p. 21.

¹⁰ *Ibid.*, *4th Annual Report* (1849), p. 5.

and 33 county agricultural societies were organized the same year.¹¹ Between the date of the reorganization of the New York Society in 1841 and 1857, State agricultural societies and boards of agriculture were formed in 24 other States, all but 6 of which were in the North. In 1858 a list was compiled of 912 "boards and societies" existing in the United States, connected wholly or in part with agriculture. Only 137 of these were in the South. New York led the states with 97 societies, Illinois had 94, Indiana 77, Ohio and Iowa each 74.¹²

The agricultural fair was a leading feature in the efforts of many of the active societies, both state and national. At the fairs, livestock shows and implement trials were leading attractions and sources of much benefit. At this time, when so many changes were occurring, when the farm organization was changing from a self-sufficing to a commercial basis, and when new territory, markets, and methods were rapidly developing and succeeding one another, the agricultural societies, fairs, and periodicals were important factors in agricultural development. They provided a stimulus to the cause and assisted in the introduction and spread of improved methods, implements, and livestock. In addition to these means of diffusing information, other influences were at work. Local differences and customs of long standing were rapidly breaking down. Orange County butter-makers and Herkimer County cheese-makers were to be found in western New York, in Ohio, and in Wisconsin; Vermont wool-growers were emigrating to Ohio and Illinois. The rapidly-improving means of transportation and communication and the development of commercial agriculture were opposed to particularistic methods.

AGRICULTURAL LEADERSHIP—JOHN JOHNSON.

The period of agricultural colleges and experiment stations had not yet dawned. As stated by the editor of the *American Farmer* in his first issue (1819), information was to be obtained by a study of the various systems which experience had proved to be the best.¹³ The name of John Johnson should be mentioned here. An enterprising Scotchman, he came to America in 1821 and settled on a farm near Geneva, New York.¹⁴ In 1835 he imported from Scotland a pattern of drain-tile and began the drainage of his farm. The labor and cost, however, were too great to warrant extensive use of tile. But in 1848 John Delafield, a neighbor of Johnson, who had observed the good results of drainage, imported a machine for making tile, which greatly reduced the price. By 1855 Johnson had laid about 47 miles of tile. In describing his early experience with tile drainage Johnson wrote:¹⁵

"I commenced under unfavorable circumstances in different ways. First for want of funds; next, the tile cost double what they do now, and digging double; and last though not least, public opinion was very much against me. Some would ask me if I was going to put crockery over all my farm. Some would tell me they thought my farm was rather too dry if anything; and some of my own countrymen would give me the hint that they had known some men drain and otherwise improve their lands so that they lost them. . . . Notwithstanding all this, I still felt confident that my drain-

¹¹ Ill. State Agric. Soc. *Transactions*, III (1853), pp. 1, 3.

¹² U. S. Patent Office, *Annual Report* (1858), *Agriculture*, 91.

¹³ *American Farmer*, I (1819), 5.

¹⁴ Bailey, *Cyclopedia of American Agriculture*, I, 403.

¹⁵ N. Y. State Agric. Soc. *Transactions*, XV (1855), p. 258.

ing would end well if I lived, as the excess of two years' crops after draining would pay the cost, and I persevered, and the more I drained the more I was convinced I was right, and I have not been disappointed at the result, as my fondest anticipations have been realized."

Johnson traveled over the State, wrote articles for the journals and agricultural reports, and was visited at his farm by a large number who came to observe the results of drainage and soil improvement. In 1859 he was presented with a service of plate in recognition of his service to the agriculture of New York by a group of prominent New York citizens. Such was mainly the method of discovering new things in agriculture from 1840 to 1860. As Jesse Buel may serve to typify the movement for agricultural improvement in the East from 1820 to 1840, so John Johnson may serve as a representative of the continuation of the movement from 1840 to 1860.

SCIENCE AND AGRICULTURE—AGRICULTURAL CHEMISTRY.

Rapid advance was being made in the sciences pertaining to agriculture, especially in chemistry. Philosophers had speculated for ages regarding soil fertility and as to what constitutes the food of plants, but not until the beginning of the nineteenth century was the attention of chemists turned to the subject. In 1804 De Saussure published his *Recherches Chimiques sur le Vegetation*. Davy's lectures on agricultural chemistry (1803) did much to extend the existing knowledge of the relation of chemistry to agricultural practice. The investigations of Bousingault began to develop about 1834. Three years later Sir James Lawes began the experiments upon his estate at Rothamsted, England, which have meant so much to agricultural knowledge and progress. It was, however, the appearance in 1841 of the American edition of Liebig's work, *Chemistry in Its Application to Agriculture and Physiology*, in which he traced the relation between the nutrition of plants and the composition of the soil, which attracted widespread interest to the subject in the United States. Now began a true understanding of the fundamental principles of manuring, following a long period of more or less general speculation on the subject.

LIEBIG'S MINERAL THEORY.

Liebig's mineral theory and its application to soil fertility at once became a popular theme of discussion in the agricultural publications and on the public platforms of the East. High hopes were entertained of the benefits to be derived from "chemical agriculture."¹⁶ It is said that "a little learning is a dangerous thing," and so it proved in this case. With the limited knowledge then possessed, too great confidence was placed in the practical value of soil analysis and in mineral manures. When it was found that certain mineral elements were required for the growth of plants and that these were furnished by the soil, it was proposed to analyze the soil and the plant, and from their chemical compositions to form the basis of treatment. If the soil lacked any necessary constituent, it could be supplied by mineral manures. When interest had once been aroused by the work of Liebig and other scientists, persons of less note carried on the agitation for "this new and greater application of chemistry to agriculture." Papers teemed with advertisements of "chem-

¹⁶ Buel, *Farmer's Companion* (ed. 1839), 71.

ists" and "professors" who for the moderate sum of \$5 or \$10 would analyze the soil and advise as to its treatment.

Increasing attention was devoted to the making and applying of compost manures. To encourage their use, premiums were awarded by the agricultural societies for the best prepared compost. Muck, straw, lime, seaweed, and hog manure were favored constituents, the relative merits of which were discussed and rediscussed. The first premium on compost at the Maine State Society Fair, in 1860, was awarded to a lot "made of 60 loads swamp muck, 10 loads of thatch hay, 10 cords rock-weed, to which were added 30 large sturgeons and 5 hogsheads of fishbrine, and the droppings of 20 head of cattle." Another parcel consisted of "7 cords of muck, 10 of rock-weed and 5 from the pig sty."¹⁷ Guano and artificial fertilizers made according to formulæ based on the chemical composition of plants began to come into use in the Atlantic States. The use of nitrates and of superphosphate of lime became common.

THE INTEREST IN AGRICULTURAL EDUCATION—MICHIGAN AGRICULTURAL COLLEGE.

But more than all else, these new discoveries helped to awaken a sense of the relation of sciences to agricultural practice and to stimulate a desire for information and education. No names appear more frequently in the agricultural literature of the years succeeding 1840 than those of Liebig, Davy, and Johnson. Few were the speeches in favor of agricultural education, which did not mention these early investigators. It was in such an atmosphere that the Michigan Agricultural College, the first institution of its kind in the country, received its first class of students in May 1857. Thus a new phase in agricultural education was begun.

The spirit in which these new discoveries were received, typical of the optimistic attitude of the period, is well illustrated by the following extract from President James Wadsworth's address before the New York Agricultural Society in 1842:¹⁸

"The application of science, the most profound which has yet been attained by the far-reaching efforts of the human mind, to all the products of our industry, to the soil, the crop, the animal, has been reserved for the age in which we live. It is not claiming too much to say that more progress has been made in this direction within the last twenty years than in any previous century. . . . From the origin of our race almost to the present time, the path of the husbandman has been clouded in darkness and doubt. From the sowing of the seed to the gathering of the harvest, mystery attended every step. . . . The precepts of tradition, the results of a multitude of experiments, were founded mostly in wisdom; . . . Not so now. The scientific analysis of soils, of manures, and of vegetable products, explains not only the workings of nature and the practices of art, but opens an inexhaustible field of new combinations and novel results."

Much of the discussion which had previously centered around the business aspects of farming was now shifted to other subjects. In the East, chemical agriculture was the center of discussion; in the West, the development of machinery and other means with which to exploit the soil were attracting attention. Science at last began to supplement wisdom and speculation.

¹⁷ Maine Bd. of Agric., *5th Annual Report* (1860), *Abstract of Returns from Agric. Societies*, 56.

¹⁸ N. Y. State Agric. Soc. *Transactions*, II (1842), p. 50.

CHAPTER XXVI.—WHEAT.

THE DECADE FROM 1840 TO 1850.

In 1839 four States produced 61.5 per cent of the total wheat crop of the country. In the order of their importance these States were Ohio, 19.5 per cent, Pennsylvania, 15.6 per cent, New York 14.5 per cent, and Virginia 11.9 per cent. The Southern States were producing 12 per cent of the total wheat crop, the border States 24 per cent, and the Northern States 64 per cent. In Ohio the wheat was largely produced in a strip of country comprising about half of the State and extending from the east central to the southwest-

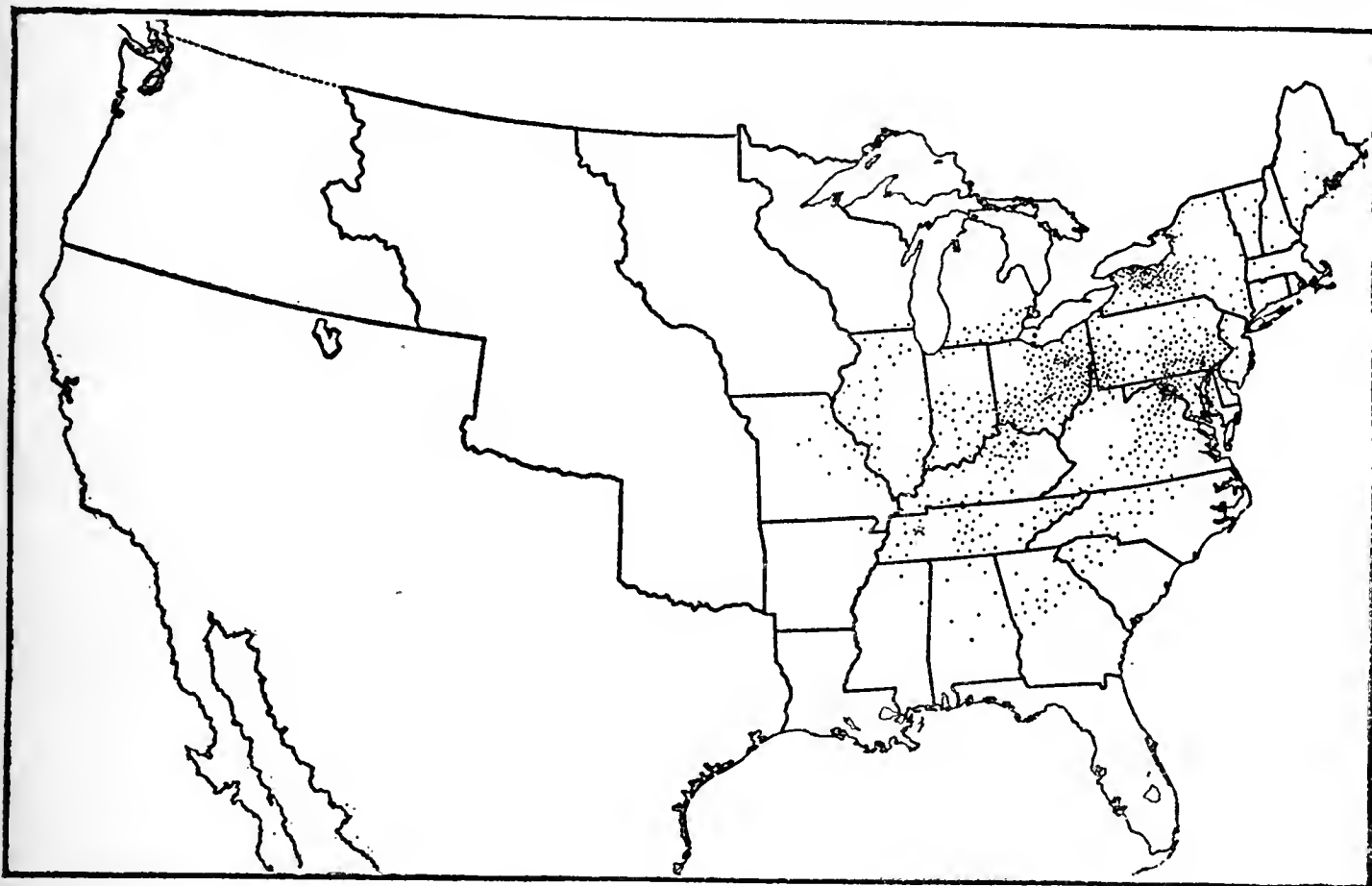


FIG. 71.—Wheat, 1839. Each dot represents 100,000 bushels.

Western New York, eastern Ohio, the vicinity of Cincinnati, and the limestone valleys of Pennsylvania and Maryland were the prominent wheat growing regions in 1839. Ohio produced more wheat than any other state. West of Ohio there was no distinctive wheat growing region.

ern part of the State. (See fig. 71.) Western Pennsylvania was a part of the same wheat region. Wheat was an important crop in the limestone regions of southeastern Pennsylvania and of the valleys of Maryland and Virginia. The wheat area of New York was largely in the northwestern part of the State. Eastern New York and the New England States raised very little wheat. In the West, wheat-raising had but just begun in the Lake Michigan region.

In 1849 the four States mentioned above still led in the production of wheat. (See fig. 72.) Southern Michigan and Wisconsin, northern and west-central Illinois were the regions of greatest increase. Production had extended west-

ward along the Missouri River and into southeastern Iowa. There was but a slight increase in total production. In the East the changes in wheat-growing during the decade of the forties were largely changes in methods, shortening of the period of summer fallow and increased care in culture. In the West, along with the expansion of the wheat area, poor crops and low prices during the years 1847 to 1853 were leading to general dissatisfaction with the wheat crop, to increased sowing of spring wheat, and to diversified farming.

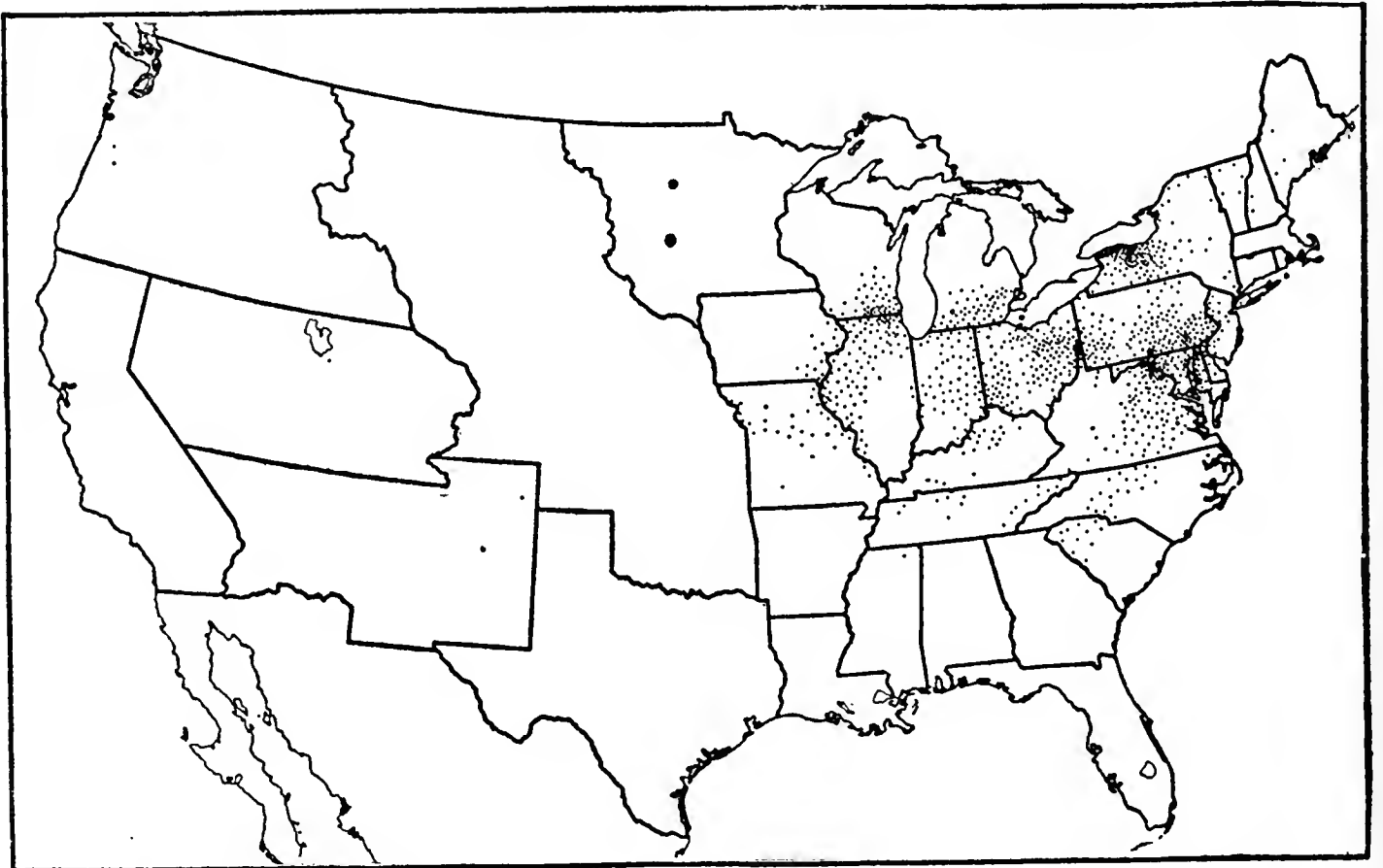


FIG. 72.—Wheat, 1849. Each dot represents 100,000 bushels.

During the forties a wheat growing region began to develop on the borders of Lake Michigan. Southern Michigan, southern Wisconsin, northern Illinois and Indiana greatly extended their wheat area. In New England the production of wheat was declining.

WHEAT IN NEW ENGLAND.

By 1840, wheat was no longer considered a staple crop in New England agriculture. In southern New England it was grown chiefly for home use and was raised in small patches of 2 or 3 acres, in rotation with other crops. A common rotation was oats, corn or potatoes, wheat, and grass. Wheat sown on sod-land after one plowing with an application of lime was considered one of the best systems.¹ Liberal amounts of lime, ashes, and manure were usually applied to the land before the crop was sown. In Maine, newly burned-over land was considered the best for wheat. In northern New England, spring wheat had been rather generally substituted for winter wheat. Methods of seeding were the same as in eastern New York. As a preventive of smut, wheat seed was soaked in brine and rolled in lime before seeding. As a preventive of the wheat midge, many farmers gave the standing grain just as it was coming into flower a thorough coating of newly-slaked lime, the application being made while the grain was wet with dew or rain.

¹ U. S. Patent Office, *Annual Report, 1852, Agriculture*, 117, 120, 130.

TABLE 38.—Wheat: Production in the United States.

[Source: U. S. Census, 1840, 1850, and 1860.]

Geographic division and State.	1840.			1850.			1860.		
	Total 1,000 bu.	Per capita bu.	Per cent U. S. total.	Total 1,000 bu.	Per capita bu.	Per cent U. S. total.	Total 1,000 bu.	Per capita bu.	Per cent U. S. total.
United States	84,823	5.0	100.0	100,486	4.3	100.0	173,105	5.5	100.0
Geographic Division:									
New England	2,014	0.9	2.4	1,091	0.4	1.1	1,083	0.3	0.6
Middle Atlantic ..	26,274	5.8	31.0	30,090	5.1	29.9	23,486	3.1	13.6
East North Central	26,326	9.0	31.0	39,328	8.7	39.1	79,798	11.5	46.1
W. North Central.	1,192	2.8	1.4	4,514	5.1	4.5	15,207	7.0	8.8
Mountain				304	4.2	.3	823	4.7	.5
Pacific				229	2.2	.2	6,841	15.4	4.0
New England:									
Maine	848	1.7	1.0	296	.5	.3	234	.4	.1
New Hampshire ..	422	1.5	.5	186	.6	.2	239	.7	.1
Vermont	496	1.7	.6	536	1.7	.6	437	1.4	.3
Massachusetts	158	.2	.2	31			120		.1
Rhode Island	3			^a 31			1		
Connecticut	87	.3	.1	42	.1		52	.1	
Middle Atlantic:									
New York	12,287	5.1	14.5	13,121	4.2	13.0	8,681	2.2	5.0
New Jersey	774	2.1	.9	1,601	3.3	1.6	1,763	2.6	1.0
Pennsylvania	13,213	7.7	15.6	15,368	6.6	15.3	13,042	4.5	7.6
East North Central:									
Ohio	16,572	10.9	19.5	14,487	7.3	14.4	15,119	6.5	8.7
Indiana	4,040	5.9	4.8	6,214	6.3	6.2	16,848	12.5	9.7
Illinois	3,336	7.0	3.9	9,415	11.1	9.4	23,837	13.9	13.8
Michigan	2,157	10.2	2.6	4,926	12.4	4.9	8,336	11.1	4.8
Wisconsin	212	6.9	.2	4,286	14.0	4.2	15,658	20.2	9.1
West North Central:									
Minnesota				1	.2		2,187	12.7	1.3
Iowa	155	3.6	.2	1,531	8.0	1.5	8,449	12.5	4.9
Missouri	1,037	2.7	1.2	2,982	4.4	3.0	4,228	3.6	2.4
Dak. Territory ...							1	.2	
Nebraska							148	5.1	.1
Kansas							194	1.8	.1
Mountain:									
New Mexico				196	3.2	.2	434	4.6	.3
Utah				108	9.5	.1	385	9.6	.2
Nevada							4	.5	
Pacific:									
Washington							86	7.4	.1
Oregon				212	15.9	.2	827	15.8	.5
California				17	.2		5,928	15.6	3.4

^a Less than 500 bushels.

STATE BOUNTIES.

Several attempts had been made in New England during the thirties to encourage wheat production. The Maine Legislature at the session of 1837, passed an act allowing \$2 bounty for the first 20 bushels of wheat raised by any one farmer, and 6 cents for every bushel over that amount, the object being to encourage the culture of wheat. A considerable sum of money was paid out to farmers under this act.² In 1838, the State of Massachusetts likewise offered a bounty upon wheat grown within the State. The object of the law was said to be two-fold: First, to ascertain the capacity of the State to produce wheat; second, to learn the common modes of cultivating it, in order if possible thence to determine the best mode. It appeared from the records of 3,600 claimants under the Massachusetts law, which were examined in 1839, that the crop suffered considerably from drought and severely from the grain insect or wheat fly, and that there were many instances of smut. It appeared also from the returns that in scarcely any instance did the use of lime or plaster give any decided result. The average yield was set at about 15 bushels.³

CAUSES OF DECLINE OF WHEAT-GROWING IN NEW ENGLAND.

Several reasons were given for the decrease in wheat acreage, chief among which were competition of the West, soil exhaustion, and the repeated attacks of the wheat midge, rust, and Hessian fly. Vermont reported a large decline on her clay soil caused by the ravages of the midge and declining soil fertility.⁴ Massachusetts, Connecticut, and Rhode Island attributed their rapid falling off in large part to the "less and less inducement to cultivate wheat there, owing to the immense crops of the West."⁵ The development of dairying and sheep farming also led many farmers to give up the cultivation of grain, and it appears, indeed, that the New England farmer was glad to abandon wheat-growing when the western supply became available.

The cultivation of wheat in New England continued to decline during the forties. In the three southern States the crop was nearly abandoned; in the three northern States its acreage was rapidly decreasing. From Maine, in 1848, came the report:

"Twenty years since, our land produced a fine crop of spring wheat with as much certainty as we looked for a crop of hay. But this has sadly changed. Numerous enemies have sprung up, amongst which, mildew, and rust, and the weevil are the greatest, till the raising of a field of wheat is viewed as an experiment. A majority of our farmers have abandoned the trial entirely."⁶

A writer from Richmond, Massachusetts, in 1852 thus expresses the New England sentiment:⁷

"Less and less of it [wheat] is sown each year. When oats are worth fifty cents a bushel, and corn seventy-five cents, and superfine flour can be bought for five and six

² Maine Board of Agriculture, *5th Annual Report* (1860), p. 178. See also above, p. 193.

³ *3d Report, Agriculture of Massachusetts* (1840), pp. 16, 48, 50, 51.

⁴ *Cultivator*, VIII (1841), p. 146.

⁵ U. S. Patent Office, *Annual Report*, 1843, p. 19.

⁶ *Ibid.*, (1848), p. 342.

⁷ *Ibid.*, (1852), p. 151.

dollars a barrel, a general opinion prevails that it is cheaper to raise the former and buy the latter than to run the risk of an uncertain wheat crop."

WHEAT AND THE CROPPING SYSTEM IN NEW YORK.

A large share of the total wheat crop of New York in 1839 was grown in the western section of the State in the Genessee Valley. (See fig. 71, p. 321.) Here wheat was the staple product, and wheat sown on a summer fallow was the common method of production. The prevailing cropping systems were: (1) to sow wheat on alternate years after peas, or (2) after a clover crop which had been sown amidst the wheat the previous spring, or (3) to sow wheat on a pasture sod.

Fallowing, as practiced by the New York farmer of this period, was of many degrees of thoroughness, varying from a constant stirring of the soil with consequent absence of crops for an entire year, to merely plowing the land and leaving it idle during July and August.⁸ The earlier practice, a naked fallow lasting from April to seeding time, had been largely abandoned. It was usual in 1840 to begin the fallow by plowing under a crop of clover, peas, or a pasture sod the last of June, then to plow again after haying in August, when the sod was fairly dead and partially decomposed, and a third time about the first of September, when the seed was sown and harrowed in. In addition, a harrowing between each plowing and two harrowings after seeding were often given. Stable manure was often applied to the sod before plowing, or at the time of the last plowing, together with from 1½ to 2 bushels of gypsum per acre. Many of the best farmers preferred to have the clover grazed off in the spring before plowing and were increasing their flocks of sheep for that purpose.

A JUSTIFICATION OF SUMMER FALLOWS.

A New York farmer in 1843 thus attempted⁹ to justify the practice of summer fallowing which prevailed in the western half of the State:

"In large parts of our country where wheat is grown, summer fallowing, or the previous preparation of that crop by plowing, harrowing, etc., is indispensable to the success of a crop; and as cultivation is extended and continued, the practice must more widely prevail. The necessity. . . . of the course is for cleaning the soil; as owing to imperfect farming, and careless culture, most farms are so overrun with weeds, that unless some thorough measures are taken for their destruction, the crop of grain appears to be considered by them as an intruder. . . . Now and then, indeed, an individual who manages better than his neighbors; who has guarded against the introduction and spread of weeds, or by skillful culture has eradicated them; who by a proper rotation and manuring, has made his whole farm capable of the production of any crop; and who by draining or deep plowing has given a fineness, dryness, and depth, that renders summer fallowing unnecessary, dispenses with this laborious process, and putting in his wheat after corn, peas, or roots, gives these the first benefit of his manures, and finds the crop produced in the place of a fallow, a clear gain. . . . At present it must be conceded that in general summer fallows are necessary, and that unless every part of the farm submitted to cropping is occasionally fallowed, it will soon become so foul as to be unfit for the production of grain."

While the growing of corn and root crops in rotation was increasing, the difficulty of removing the corn or the roots from the land in season to sow

⁸ *Cultivator*, new series, II (1845), p. 20.

⁹ *Cultivator*, X (1843), p. 122.

the wheat was a common objection. One writer of the time,¹⁰ after discussing the merits of rotation and the good effects upon the wheat crop of applying manure to the preceding corn crop, concludes with the statement:

"It is unhappily too true, that on a large portion of our best cultivated wheat lands, the soil has become so infested with a variety of foul and noxious plants [Canada thistles, oxeye daisies, white daisies, johnsworth] that a course of naked summer fallow, thoroughly performed, has become necessary to counteract them, and prevent their increase and spread. . . . The only alternative of such fallows is hoed crops, and these must of necessity. . . . be too limited to seriously affect the propriety of fallows on weedy land."

Barn-yard manure was frequently spread on the furrow and harrowed in with the seed wheat; ashes and lime were used in large amounts, but clover and plaster were mainly relied upon to keep up fertility. Subsoiling was being tried by a few who reported results of one-third more wheat per acre. Summer fallowing, however, was still the common practice in western New York. A Monroe County farmer writes in 1845:¹¹

"Of the one hundred and eighty-four acres, I calculate to have one-third or one-fourth of it annually in wheat, according to the condition of the soil to produce a bountiful crop, two-fifths of which is sown after summer crops, barley, oats, or peas, but generally barley. The remaining three-fifths of it [is] sown on summer fallow, viz: forty-five or fifty-five acres in wheat, ten or fifteen for hoe crop, the same in barley and oats, forty in pasture, forty for hay and clover seed, and thirty for fallow."

In the six largest wheat-growing counties of western New York, in 1854, over 17 per cent of the improved land was reported to be in fallow, being nearly equivalent to the area of winter wheat. In Rensselaer and Albany Counties in eastern New York, in the same year, only 1.8 per cent of the total improved land was in fallow. In Onondaga and Cortland Counties, in central New York, the per cent of fallow land was 1.4.¹² The method of working the fallow was also changing, the cultivator now being extensively used in place of the plow.¹³ A good team was said to be able to go over 10 or 12 acres per day.

DECLINE OF WHEAT GROWING IN HUDSON AND MOHAWK VALLEYS.

With the development of the wheat region of western New York and the growth of livestock farming in the eastern part of the State, wheat-raising had declined in the valleys of the Hudson and the Mohawk. In the Hudson Valley soil exhaustion was apparent. In addition, the ravages of the wheat midge and the Hessian fly, beginning about 1830, had become so disastrous as to destroy in 1835 and 1836 almost the entire crop. Many farmers abandoned further attempts to cultivate this grain.¹⁴ By 1840, however, many of the farmers in this region were venturing again to raise wheat on a moderate scale with good success.¹⁵

¹⁰ *Ibid.*, VII (1840), p. 133.

¹¹ N. Y. State Agric. Soc. *Transactions*, V (1845), p. 194.

¹² *Ibid.*, XVI (1856), p. 204.

¹³ *Cultivator*, new series, VI (1849), p. 109.

¹⁴ N. Y. State Agric. Soc. *Transactions* (1860), pp. 750-52.

¹⁵ *Cultivator*, VII (1840), p. 160.

On the high lands of the Mohawk Valley, especially in Madison, Onondago, and Cayuga Counties, winterkilling and the low yields of winter wheat on all lands, except the first fallowing of pasture lands, were leading to the substitution of spring wheat for winter wheat. Many farmers, finding dairying or the raising of barley and oats more certain and profitable than wheat, were gradually abandoning its culture. In this region the summer fallow had rather generally given way to fallow crops.¹⁶ The U. S. Patent Office Reports for 1843 and 1844 state that the New York wheat crop had diminished very sensibly during the past 10 years.¹⁷ Much of the decrease was undoubtedly the result of the abandonment of wheat-growing in the older counties of eastern New York.

WHEAT IN PENNSYLVANIA.

Pennsylvania ranked second in the production of wheat in 1839. Within the State there were two wheat-producing regions—one in the limestone districts in the southeastern part of the State, the other in the western part of the State in the counties adjoining Ohio. (See fig. 71.) During the thirties the condition of the wheat crops in eastern Pennsylvania had much improved. Formerly the soil had been greatly exhausted through continued cropping to grain. During the early thirties yields had been so low and the ravages of the Hessian fly so severe that many farmers had almost despaired of further cultivation of wheat. But better methods of tillage, a judicious rotation of crops, care and attention in the collection and use of manure and lime, together with the introduction of Mediterranean wheat, had later given a new impetus to the cultivation of grain.¹⁸

In 1840, wheat in this region was commonly produced as one crop in a well-established rotation of corn, oats, winter wheat or rye, clover, pasture. The oat-stubble was sometimes plowed in August, allowed to lie fallow about a month, then plowed again, and seeded; or often it was plowed only once before seeding. Improved methods of culture and attention to liming and manuring were giving increasing yields.¹⁹ As much as 25 to 30 cart-loads of stable manure or 400 pounds of guano per acre were frequently applied before seeding to wheat.²⁰ In central New Jersey, wheat was usually sown in a rotation of corn, potatoes or other truck crops, wheat, clover and timothy.²¹ In Maryland and Delaware the increasing use of marl, lime, guano, and clover was reported as leading to an increase in wheat production.²²

OHIO'S LEADERSHIP, 1839 AND 1849.

Ohio produced 16,500,000 bushels of wheat in 1839 and 14,500,000 in 1849. In 1839 the State ranked first in bushels of wheat produced and in 1849 second, Pennsylvania having taken first place. After the opening of the Erie Canal, Ohio had rapidly developed as a wheat-growing State. In 1845 the flour

¹⁶ N. Y. State Agric. Soc. *Transactions* (1841), p. 145.

¹⁷ U. S. Patent Office, *Annual Report*, 1843, p. 19.

¹⁸ N. Y. State Agric. Soc. *Transactions*, II (1842), p. 105.

¹⁹ U. S. Patent Office, *Annual Report*, 1850, *Agriculture*, 156; *ibid.* (1851), p. 241.

²⁰ *Ibid.*, 1850, p. 156.

²¹ *Ibid.*, 1851, p. 233.

²² *Ibid.*, 1851, p. 263.

exports of the State were reported as 450,000 barrels from Cleveland, 100,000 from Toledo, 150,000 from Sandusky, 150,000 from Cincinnati, 40,000 from Marietta, and 30,000 from Portsmouth. The lake now provided the chief outlet for Ohio wheat.²³

The wheat counties in the main comprised a region of the State located on the dividing ridge that separated the waters flowing into Lake Erie from those emptying into the Ohio River. Knox, Licking, Richland, Ashland, Wayne, Stark, Muskingum, Fairfield, and Belmont were the leading counties. About half of this region might be called hilly, while the remainder was rich valley or table land. The valley land was said to range in price "from \$30 to \$40 per acre; the moderately hilly and undulating at from \$20 to \$30; and the high table lands at from \$15 to \$20 per acre."²⁴ It was the opinion of the early settlers that the quality of any soil could be ascertained fairly well from a study of the timber grown upon it. The high, rolling upland, covered with a thick growth of oak, was considered the best and most certain land for wheat. For other crops, the land originally covered with a thick growth of sugar maple, elm, black walnut, and cherry was considered best.

THE METHODS OF CULTIVATION, 1851.

The method of wheat cultivation is thus described in the *Cultivator* of 1851:²⁵

"The cultivation of clover as a preparative crop of wheat, is more generally practised on the oak lands, such as abound in Richland, Ashland, Wayne, and Stark Counties, than in any other portion of Ohio. In these and a few adjoining counties, the system of making naked summer fallows prevails very generally, and indeed but very little wheat is sown in any other way, by those who make it a point to make their wheat crop their main dependence. The summer fallow is usually made on a two-year old clover sod. It is rarely broken up before the first of July, and after which it is allowed to remain almost untouched until the first week in September, when it is again plowed, usually lengthwise of the first furrow, to be sown for wheat. The seed is then covered either with a harrow, cultivator, or a shovel plow, and in some rare cases with a drilling machine, which completes the whole process.

"Within the past three or four years the very rational opinion has gained ground, that under a careful system of rotation of crops, the plan of making naked fallows may be dispensed with altogether. To what extent this cheap plan of growing wheat may be extended is difficult as yet to determine, but it is quite certain that extraordinary yields are produced by this method throughout many portions of the best wheat-growing counties in Ohio, and when the value of the clover crop for hay or pasturage is taken into account, it brings the cost of producing wheat to a mere nominal standard when compared with the expensive process of making a naked summer fallow as is usually done in New York and Pennsylvania.

"In some instances wheat is made to follow the oat crop, in which case the latter succeeds a crop of corn, which if well cultivated leaves the ground in a good condition for oats. A still worse practice than this is adopted by some. Allusion is now made of sowing wheat after wheat, for a succession of years, by simply allowing occasionally a crop of corn to intervene. The past season thousands of acres were sown in this way, and at the present time (the first of June) a finer prospect for a full average crop could not be desired.

"The foregoing is the practice in the counties mentioned, as well as in favorable sections for wheat in other portions of the state. In the southern, central and western

²³ U. S. Patent Office, *Annual Report*, 1845, p. 367.

²⁴ *Cultivator*, new series, VIII (1851), p. 257.

²⁵ *Ibid.*, p. 258.

range of counties, the almost universal practice is to sow wheat after the corn crop, or with it before it is harvested. Naked fallows are rarely ever made in the corn and grazing regions of Ohio. On this account a much more slovenly practice of managing the wheat crop prevails where corn and grass are the main dependence of the farmer, than where wheat forms the principle staple. Honorable exceptions, however, are made to this rule in every county and neighborhood of the state. . . . But it is evident, that so long as the fertility of the soil is such as to secure a heavy crop with a small expenditure of labor, that only a few can be persuaded that it will pay cost to adopt more expensive systems of culture. These influences and others of a like character, prevent to a great extent, the adoption of systems of farm management, that in other counties would be considered essential to success."

WHEAT IN THE WEST, 1840.

West of Ohio very little surplus wheat was produced in 1840. The two southern tiers of counties in Michigan, the southern half of Indiana, the region of the Illinois River in Illinois, and of the Missouri River in Missouri

TABLE 39.—*Sources of wheat and flour entering the Erie Canal at Buffalo in 1840.*^a

Where produced.	Flour.	Wheat.
	<i>Barrels.</i>	<i>Bushels.</i>
Ohio	505,262	725,025
Michigan	112,215	97,249
Indiana	13,726	^a 48,279
Illinois	2,259	10,634
Wisconsin	166	.....
Total	633,628	881,187

^a *Cultivator*, VIII (1841), p. 28.

were the leading wheat sections, although in none of them was the soil entirely devoted to the crop. The exportation of grain from the Lake Michigan region had but just begun to attract attention. Illinois and Indiana produced two-thirds of the wheat crop raised west of Ohio and north of the Ohio River.

INCREASE IN WHEAT PRODUCTION, 1840 TO 1850.

During the forties there was a large increase in wheat production in the West. By 1850, over 15,000,000 bushels of grain were arriving at the port of Buffalo annually from the West,²⁶ the larger part of which was produced on the newly cultivated prairie farms. The increase in wheat production was greatest in southern Michigan and Wisconsin, northern Illinois, and in the region between the Illinois and Mississippi Rivers. The railroad from Pontiac, Michigan, to Detroit, 26 miles in length, was said to have carried 40,000 barrels of flour in the year 1844.²⁷ In Iowa and Missouri the increase was comparatively small. (See figs. 71 and 72.)

Before 1847 the wheat crops in the Lake Michigan region had been generally good, and glowing reports spread over the country regarding the possi-

²⁶ Buffalo Board of Trade, *Annual Report* (1869), p. 20.

²⁷ *Cultivator*, new series, I (1844), p. 177.

bilities of wheat production in this region. But from 1847 to 1853 there was a general failure of the winter-wheat crop, especially on the prairie lands, causing uncertainty and general dissatisfaction among the wheat producers. Many farmers were led to give up the exclusive raising of wheat and took up more general lines of farming. Others substituted spring wheat for winter wheat in an attempt to continue the cropping. Many were said to have left for California in their discouragement at having lost two or three crops of wheat.

The situation was thus described by a writer in *The Cultivator*:²⁸

“Contrary to the expectations of the first settlers of the Great West, the wheat-growing business is subject to more casualties than is experienced in timbered countries; and in many cases the business has been abandoned, under the prevailing notion that a prairie soil, when subjected to a severe course of cropping, is unadapted to the growth of wheat. This opinion ebbs and flows, according to the result of the harvests; and seasons like the present, when the crop is almost universally a good one, it would find but few advocates; whereas, last year the almost entire failure of the crop so far discouraged the wheat growers, that it was difficult to convince those engaged in the business, that the country was admirably adapted for the production of wheat. . . .”

SPECIALIZATION IN WISCONSIN AND NORTHERN ILLINOIS.

In Wisconsin and northern Illinois the early settlers turned their attention almost exclusively to wheat. In Wisconsin the production increased from 212,000 bushels in 1839 to 4,286,000 bushels in 1849. Population during the same period increased from 31,000 to 305,000. Sheep, cattle, and hogs were indeed kept, and corn, oats, barley, and other crops were raised; but these enterprises were considered of minor importance by the farmer located west of Lake Michigan. Wheat was the great staple, the crop from which a money income was expected. Rotation received little attention, fertilizing practically none, and summer fallowing was rarely practiced.

The reasons advanced for devoting attention so exclusively to wheat were many. In the first place, the soil was considered well adapted to the crop and in the early years large yields were obtained. The cost of transporting wheat to market was less in proportion to its weight and value than that of corn and oats, and where the produce must be carried in a wagon 70 to 100 miles to market, this was an item of importance. The extent of the specialization in wheat may be shown by the following comparison: In 1860 the approximate ratio of bushels of wheat to bushels of corn produced was as follows: in New York, 1 to 4; in Ohio, Illinois, and Iowa, 1 to 5; in Michigan, 1 to 1.5; in Wisconsin, 2 to 1.

CAUSES OF CROP FAILURES ON PRAIRIE FARMS.

In Wisconsin it appears that the failure was especially severe on the prairie lands. A Fond du Lac County correspondent in 1853 wrote thus:²⁹

“The timbered sections of our country uniformly produce good crops of winter wheat, the average yield being, probably, not less than twenty-five bushels to the acre. The ‘oak openings’ also produce this amount in favorable seasons; but the crop on this description of land is much more precarious, the cold winds of winter and early spring

²⁸ *Cultivator*, new series, IX (1852), p. 346.

²⁹ U. S. Patent Office, *Annual Report*, 1853, *Agriculture*, 152.

frequently destroying the entire crop; and, finally, repeated failures have caused its entire abandonment by the farmers of the prairie. And yet, I have known some good yields of winter grain on prairie soil; such generally followed the first breaking up of the land. . . ."

Another wrote from Racine County in 1849 as follows:³⁰

"Wheat has been our staple product. . . . But for three or four years past it has been a precarious crop, especially on old lands, owing doubtless to the common fault of almost every farmer of bringing more land under cultivation while it is fresh and clean, than they can afterwards manure and cultivate well."

A third³¹ reported that "wheat in this vicinity is mostly raised on the prairies, but the timber lands are better adapted to its culture." The report from Rock County³² in 1851 was:

"The causes are obvious, the excuse reasonable. . . . To surround a quarter section of land with a sod fence . . . break and sow it to wheat—harvest the same and stack it—plough the stubble once, and sow it again with wheat—thrash the previous crop and haul it to the Lake, was considered good farming in Rock County [Wisconsin], continued from year to year; and hundreds confidently expected to win, by going it blind, in this very unscientific manner. And for a few years it succeeded; but a short crop or two, with a depressed market, has brought them up all standing. The cry is now heard, what shall we do to be saved?"

A Dane County correspondent says:³³

"Men have come here to settle on farms because land was cheap—have little or no capital—poor houses and no barns—a small supply of stock—some land under the plough and fenced—embarrassed with the payment of interest, taxes, and store debts—and depending on the next crop of wheat for relief, which, when gathered and taken to market, affords no profit on the cost of production."

It was the general opinion that on the whole no money had been made in the production of wheat.³⁴ The farmers began to turn to dairying, to the rearing of horses, cattle, sheep, and swine, and to the growing of flax and barley. To some, California seemed the only resource, and to that gilded region many fled as to a city of refuge.³⁵ Others continued in the same path with the firm expectation that better times must come. With the high prices that prevailed from 1854 to 1857, faith was restored in wheat. All thoughts of turning to general farming were abandoned, and specialization began again. Yields, it is true, remained low, but high prices, nevertheless, made farmers hopeful. Although high prices lasted only 2 or 3 years, their effect was sufficient to perpetuate until 1860 the one-crop system of farming.

SYSTEMS OF WHEAT CROPPING ON THE PRAIRIES.

Three systems of wheat cropping were common on the prairies. To break prairie land in the month of June and sow in September was considered the best and most certain method.³⁶ Frequently the land was cross-ploughed before seeding, but most farmers ploughed but once. A second method was

³⁰ *Ibid.*, 1849, p. 205.

³¹ *Loc. cit.*

³² Wis. State Agric. Soc. *Transactions*, 1851, p. 211.

³³ *Ibid.*, 133, 161.

³⁴ *Prairie Farmer*, X (1850), p. 349.

³⁵ Wis. State Agric. Soc. *Transactions*, 1851, p. 229.

³⁶ U. S. Patent Office, *Annual Report*, 1848, p. 542.

sowing after small grain by turning under an oat or wheat stubble, plowing again before seeding, and finally sowing the seed and running over the field two or three times with the harrow. Where old land was seeded, it was considered best to plow in narrow lands, making the open or center furrow deep, so that it could readily carry off the water. By the third method wheat seed was sown in the midst of the corn in September or October.

Some farmers varied the practice by cutting up and shocking the corn in parallel rows across the field, leaving the strips to be sown with a spring crop. In the corn-producing regions of southern Indiana and central Illinois, wheat sown among corn was the common method. In Missouri, wheat was generally sown on corn land after the corn had been cut. But as wheat culture extended, some farmers were adopting the plan of sowing on fallow land. On farms

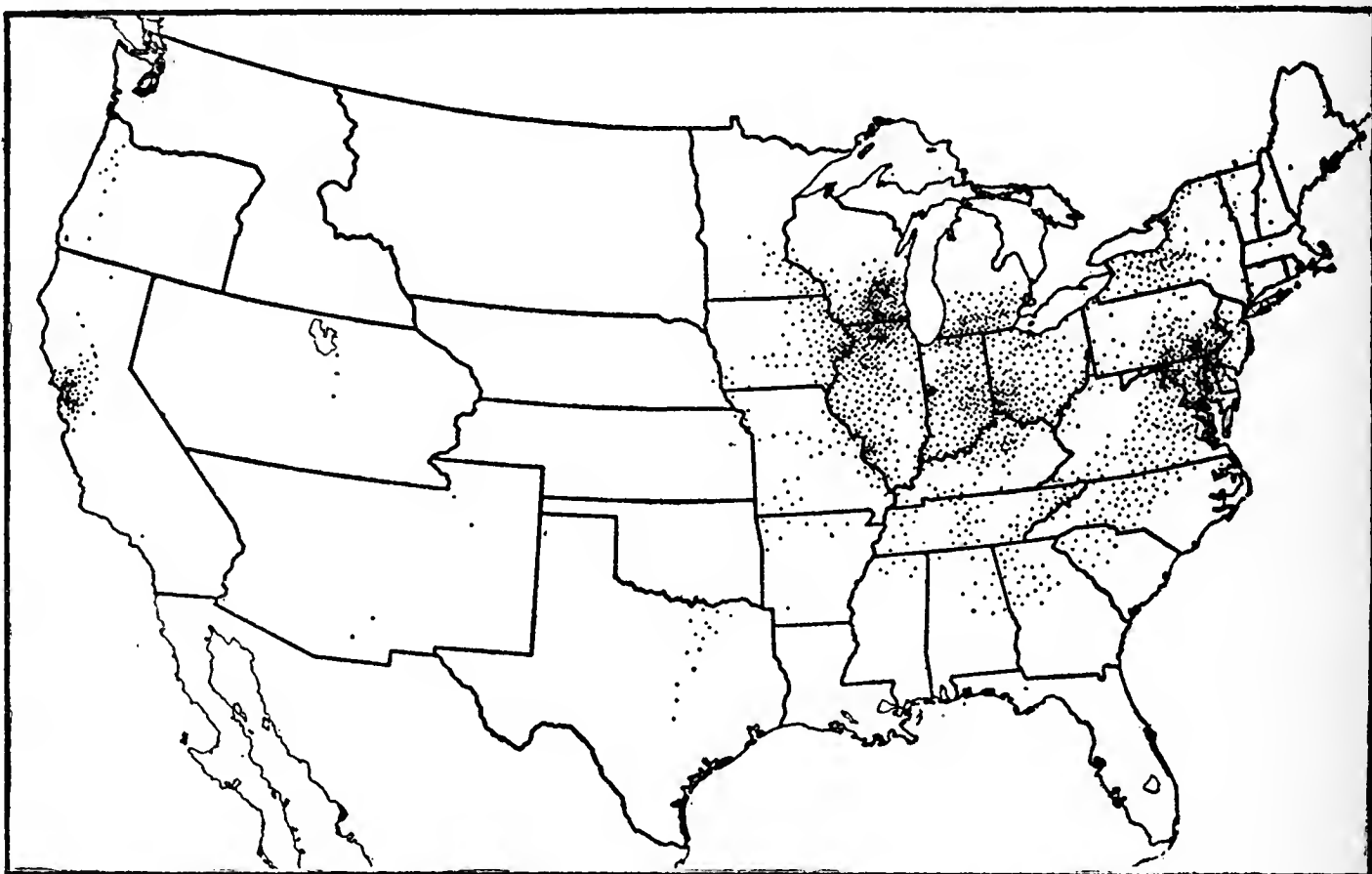


FIG. 73.—Wheat, 1859. Each dot represents 100,000 bushels.

Illinois, Indiana and Wisconsin now led the states in wheat production. The Lake Michigan region had become the leading wheat growing area of the country. In California and Oregon production of wheat had rapidly increased since 1850, while in New York and Pennsylvania there had been a decline.

raising tobacco, the wheat was generally sown on the tobacco land after taking off the crop.

ENEMIES OF THE WHEAT CROP.

Winterkilling, rust, blight, and the chinch bug were common enemies of the wheat crop in the West. The first two affected principally winter wheat, but after 1849 there were many complaints of the attacks of blight on spring wheat. While the first crop on a prairie sod was usually exempt from these enemies, in later years wheat on prairie land seemed to be more susceptible than when grown on the openings or wooded lands.³⁷ In the East, winterkilling, the Hessian fly, the weevil, and the rust were common enemies of the

³⁷ Wis. State Agric. Soc. *Transactions* (1851), p. 232.

wheat crop. Of the many remedies advocated, and sometimes practiced, the most successful were the improvement of the soil, late sowing to avoid the Hessian fly, early sowing to avoid rust and winter killing, the grazing of the wheat in the fall and early spring to check the Hessian fly, and planting in drills to check the rust.

WHEAT PRODUCTION, 1850 TO 1860.

During the 10 years 1850 to 1860 the center of wheat production was pushed farther west than in any previous decade in the history of the country. (Fig. 73.) By 1860 the States of Illinois, Indiana, and Wisconsin had far surpassed Pennsylvania and New York in the amount of wheat produced. The last two States showed a decrease since 1849. Southern Michigan and the prairie country, Illinois, Wisconsin, eastern Iowa, and southeastern Minnesota, was the region of greatest increase. Illinois in 1860 led the States in wheat production, Indiana ranked second, Wisconsin third, and Ohio fourth.

RAVAGES OF THE MIDGE IN NEW YORK AND NEW ENGLAND.

To New York wheat growers the decade was one of general hardship, while to the western farmer it was one of rejoicing over good crops and high prices, especially during the middle years of the fifties. The New York farmer was suffering from the partial failure of his wheat crop, while the western farmers were rapidly expanding the wheat area. There was a growing disposition to reduce the wheat acreage in New York and to devote the land to some other crop.

Census figures show the New York wheat crop of 1859 to have been nearly 4,500,000 bushels below that of 1849. A comparison of these figures with those of New York State census in 1855 indicate a decline of over 4,000,000 bushels from 1849 to 1854, and a further decline of nearly a half million bushels from that date to 1859. Two great causes of the decline were the ravages of the midge and soil depletion.

Since 1830, the destruction of wheat crops by the midge had attracted much attention in eastern New York and New England. This pest was first seen in western Vermont in the year 1820, though not until 1828 and 1829 did it become so numerous and destructive as to attract public attention. In 1850 the ravages of the midge attracted much attention in New York State west of Lake Cayuga, and in 1854 injury was general in the wheat-growing region. James Wadsworth gives the following account of the appearance of the midge in Monroe and Livingston Counties:³⁸

"The midge was seen here a little in 1854; it came from the East; more were seen in 1855, doing no material damage in Livingston, but considerable in Monroe. But in 1856 the midge took from one-half to two-thirds of the crop in Livingston on the uplands and nearly all on the flats. At least two thousand acres, on flats which would have yielded thirty bushels per acre, were not harvested. It was still worse in 1857, taking over two-thirds of the crop. And in 1858, of the white wheats there was very little to harvest Very little white wheat was now sown in western New York and the midge had reduced the value of all the wheat lands at least forty per cent. Lands which sold here readily for seventy dollars can now be bought for forty dollars per acre."

³⁸ N. Y. State Agric. Soc. *Transactions*, XX (1860), pp. 750-756; *ibid.* (1858), p. 300.

OTHER CAUSES OF DECLINE IN WHEAT CROPS IN THE EAST.

The failure of the wheat crop, however, was not attributed to the ravages of the midge alone; winterkilling and crop failure had been frequent for many years before the occurrence of the midge. From Ontario County, in 1855, a great falling off in the wheat crop was reported, the reasons assigned being winterkilling in unfavorable seasons.³⁹ A writer to the *Country Gentleman* in 1859, took the following view as to causes:⁴⁰

“In the *wheat midge* we have the alleged cause of the failure of the wheat crop, and its ravages have been truly disheartening. But many serious failures occurred before this injury became general—failures from poverty of soil, caused by sowing wheat after wheat or other exhausting crops—from want of drainage, and consequent winterkilling, or rust—from late sowing on imperfectly prepared ground, also inducing light and rust, and from poor management generally. All these causes prepare the wheat plant for the attacks of the midge.”

It would seem that the wheat soils of western New York had become generally depleted through continued cropping with the use of lime and gypsum as had been the case in the Mohawk Valley some 20 years before. Soil depletion resulted in frequent winterkilling with crop failures, the impoverished condition of the soil making the wheat plant very susceptible to the attacks of the midge, and thus reducing the already small yield. The New York Agricultural Society, after an extensive investigation of the wheat midge, reported in 1859 “that where lands have been thoroughly underdrained, thus receiving an earlier sowing as well as ripening of the wheat, far less damage has been sustained from the ravages of the insect.”⁴¹

PROGRESS RESULTING FROM CROP FAILURES.—LAND DRAINAGE AND SOIL IMPROVEMENT.

The frequent winterkilling and the failure of the wheat crop were leading to a wide interest in land drainage and improvement. The search for information brought John Johnson to the front with his years of experience in land drainage and soil improvement. In 1855 he reported:⁴²

“A few years ago when the midge destroyed the most of the wheat, I had six neighbors joining farms with me, and I don’t know of any of them that had over seven bushels per acre, and some not so much as that, and my farm raised between twenty-eight and twenty-nine bushels per acre, and the land being drained was the main cause. Since that time all of my neighbors have drained more or less and some very extensively.”

In 1858 he wrote to the New York Agricultural Society:⁴³ “My crop [of wheat] has not been under twenty-five bushels per acre, with the exception of last year.” Then the failure was owing to drought and cold. “But drainage won’t do all,” he maintained; “the next thing needful is manure, made by domestic animals—and it really does appear as if the farmers around

³⁹ U. S. Patent Office, *Annual Report*, 1855, *Agriculture*, 195.

⁴⁰ *Country Gentleman*, XIII (1859), p. 89.

⁴¹ N. Y. State Agric. Soc. *Transactions*, XIX (1859), p. 6.

⁴² *Ibid.*, XV (1855), p. 257.

⁴³ *Ibid.*, XVIII (1858), p. 294.

here would never take heed to this one other thing so needful to successful farming." ⁴⁴

The failure of the wheat crop brought the New York farmer squarely up against the fact of soil depletion. Following the lead of John Johnson, there was a movement towards land drainage, crop rotation, and grazing. The wheat was sown at an earlier date to avoid the midge. More care was given to the selection, the preparation, and the care of wheat lands. Increasing attention to drainage and deep cultivation were reported in 1855 as among the most cheering indications of the advancement of agriculture in New York.⁴⁵ The New York wheat crops of 1858, 1859, and 1860 were generally reported as good. The midge was less troublesome than in previous years. By 1859 wheat production was again on the increase. The crop of that year was reported as the best for many years.

In other Eastern States the attacks of the midge were not as severe as in New York. In New England about as much wheat was grown in 1859 as 10 years earlier. The high prices of the decade, the temporary cessation of severe attacks of the insects, and the reintroduction of winter wheat had put the New England farmer into a more hopeful mood regarding his wheat. Maine and Vermont showed a slight decrease in the amount produced, while the other New England States showed slight increase. In Maine excellent yields of wheat were still obtained in the newly cleared sections of Aroostook, Franklin, Somerset, and other counties.⁴⁶ Wheat succeeded best on the hilly lands. It was thought that on the hilly lands "where the wind blows" the insects bothered less.⁴⁷ "If you would succeed in wheat, raise it where the wind blows" had become an axiom with the New Hampshire wheat-grower. In eastern Pennsylvania, Maryland, and Delaware, where the attacks of the midge had not been as severe as in New York, the high prices of grain, together with the introduction of guano and improvements in culture, were said to have induced farmers to grow more wheat than formerly.⁴⁸

DECLINING WHEAT YIELD IN OHIO.

In eastern Ohio the declining wheat yield, attributed to soil depletion with winterkilling and, after 1854, to the attacks of the midge, had become a matter of great concern. For some time the evils of constantly cropping the land with the return of little manure had been apparent, until in 1854, with the first severe attack of the wheat midge, the average yield of wheat in the State was reported at 8 bushels per acre. In 1858 it was 10.3 bushels, in 1859 7.01 bushels, in 1860 about 13 bushels.

It was the opinion of John H. Klippart, secretary of the Ohio State Board of Agriculture in 1859, that Ohio had reached her maximum of wheat production and if not retrograding was at least stationary.⁴⁹ "Turn your attention to renovating your lands," he advises, "instead of dreaming of the fertile

⁴⁴ *Ibid.*, XX (1860), p. 337.

⁴⁵ N. Y. State Agric. Soc. *Transactions*, XV, (1855), p. 3.

⁴⁶ U. S. Patent Office, *Annual Report*, 1862, *Agriculture*, 51.

⁴⁷ N. H. State Agric. Soc. *Transactions* (1850-51-52), p. 74.

⁴⁸ U. S. Patent Office, *Annual Report*, 1855, *Agriculture*, 192.

⁴⁹ *The Wheat Plant*, 307, 322.

West, and make Ohio what she was intended to be, the granary of the Union." ⁵⁰ Many small Ohio wheat farmers, discouraged with their small yields and attracted by the prairie lands of the West, sold their farms to cattle graziers and moved west to begin wheat-growing again in Illinois, Iowa, and Wisconsin. The Ohio wheat yield of 1859, owing to a severe frost in June, was much below the average, especially in the eastern section of the State. Wayne County, which reported an average yield of 13 bushels in 1858 and 16 bushels in 1860, reported an average of only 3 bushels per acre in 1859. In Erie County, where the yield was said to be about the average, a large portion of the crop was sent south to sections of the State which had usually exported large quantities of wheat, thus reversing the usual course of trade. ⁵¹

THE PREEMINENCE OF THE WEST, 1850 TO 1860.

The census of 1860 shows Illinois, Indiana, and Wisconsin, in the order named, leading in the production of wheat. In 1849, four eastern States, Virginia, Ohio, New York, and Pennsylvania, produced twice as much wheat as the three western States named above; in 1859 the three western States produced 50 per cent more than the four eastern States. Minnesota produced over 2,000,000 bushels, Iowa nearly 8,500,000. The increase in transportation facilities, together with the high prices and good crops during the years 1854, 1855, and 1856, led to a rapid increase of the wheat acreage during the middle years of the decade. ⁵² Large areas of prairie land were broken for the first time and put into wheat. The improvement of the reaper enabled more acres of grain to be raised per man. By 1855, California could report: ⁵³

"There is no longer any need of shipping breadstuffs from the Atlantic to the Pacific Coast. We have an abundance of our own to spare. Flour and grain are cheaper here than in New York."

Systems of cropping were much the same as in the previous decade. In the northern region of Illinois, spring wheat was now grown almost exclusively, in central Illinois spring and winter wheat, and in the southern part winter wheat alone was sown. In Iowa, winter wheat was reported to have been an uncertain crop for several years and spring wheat had taken the precedence on prairie lands, although winter wheat was still usually raised on a prairie sod and frequently upon second sod, or the second year after breaking. On the timber soil winter wheat was principally grown. ⁵⁴ The wheat crops of 1857, 1858, and 1859 in the prairie region were generally poor. The chinch bug severely injured the Illinois wheat crop of 1858; ⁵⁵ the Hessian fly, the midge, the smut, and the rust were all serious enemies. Prices were low; the western farmer was for the second time becoming uneasy regarding wheat-growing on the prairies, when the "luxuriant crop" of 1860 again revived his faith. ⁵⁶

⁵⁰ Klippart, *The Wheat Plant*, 322.

⁵¹ Ohio State Board of Agriculture, *14th Annual Report* (1859), p. 152.

⁵² *Country Gentleman*, X (1857), p. 90.

⁵³ *Ibid.*, V (1855), p. 233.

⁵⁴ Iowa State Agric. Soc. *Transactions*, 1857, p. 256.

⁵⁵ Ill. State Agric. Soc. *Transactions*, 1860, p. 335.

⁵⁶ *Ibid.*, 336.

USE OF MACHINERY IN SEEDING AND CULTIVATING.

In 1840, wheat was sown broadcast by hand. The common practice in Ohio was to sow the seed on the plowed surface and harrow it in with a harrow or steel-tooth cultivator. Some farmers, however, plowed the seed in with a shovel-plow, and followed the plow with the harrow. A few, following the advice of Jethro Tull, were beginning by 1844 to drill their wheat with the hope of securing freedom from rust, mildew, and winterkilling.⁵⁷ It is interesting to note that the work of Jethro Tull, printed more than 100 years before (1733), was much quoted during this period. One writer of the time, after discussing the methods of Tull, concludes with the statement:⁵⁸

“This plan—though not adapted to American farming, for the reasons that, generally, we wish grass to follow our wheat crop—was yet deemed sufficiently plausible to determine us to give a fair trial to the drilling, in comparison with the broadcast plan.”

By 1850, seed drills were generally used in the wheat region of Pennsylvania and New York; in Ohio only a few had as yet been tried, but many farmers were said to be already convinced of their utility.⁵⁹ In New England, where the fields were small, wheat was sown broadcast by hand and covered with a light plow, cultivator, or common harrow. In the prairie region of the West, the wheat when sown in the midst of corn, was worked into the soil with the shovel-plow, the cultivator, or with a small ordinary plow. When seeded upon newly broken sod, it was commonly sown broadcast and harrowed in. On old land the harrow, the plow, the cultivator, or the bush were used to work the seed into the ground. The roller was frequently run over the land at the time of seeding. By 1860 the drill was rapidly coming into use. Much of the wheat in the Mississippi Valley was now sown by machine. West of the Mississippi the drill was yet but little used.

REAPERS AND THRESHERS.

The wheat crop of the early forties was reaped with a cradle. (See figs. 15, 16 and 17, p. 207.) The reaping machine had been invented and tried and some few were already in use in the regions of Maryland and Virginia, but as yet they were in the experimental stage and their influence on the wheat industry was in the future. After 1846 the use of the reaper rapidly increased. The era of high prices in the middle years of the decade caused an almost universal demand for reapers. When the wheat on an acre of prairie sold for several times the price of the land it seemed a sure investment to seed more wheat and buy a reaper. In 1855 so many were in use at different points that they had ceased to be a curiosity, and from that time on they were adopted about as rapidly as they could be manufactured. Railroads made it possible to transport grain economically from far inland, while the reaper made it now possible to harvest larger areas than formerly.⁶⁰

In 1840, threshing was commonly done by machine, although a considerable amount was still “tramped out” by horses and cattle or beaten out with a

⁵⁷ *Cultivator*, new series, I (1844), p. 44.

⁵⁸ U. S. Patent Office, *Annual Report*, 1844, p. 180.

⁵⁹ Ohio State Board of Agric., *3d Annual Report* (1848), p. 174.

⁶⁰ U. S. *Census of 1880*, III, *Agriculture*, 521.

flail. The latter methods were chiefly used in the newly settled parts of the West, and in eastern regions where but little grain was grown.⁶¹ Ten years later in the wheat-growing regions much of the wheat was threshed by portable machines. Many farmers owned their own machines and threshed from the shock, while others stacked their wheat and had it threshed at a later date by traveling outfits. In many of the more remote and newly settled regions, where markets were poor and the settlers of small means, the threshing machine had not yet been introduced. In all wheat-growing regions, by 1860, the wheat was threshed and separated by machine, the newer and larger machines screening and cleaning the grain as well.⁶² An Illinois writer thus describes the method of threshing on the prairie in 1853:⁶³

“At first farmers owned their own threshers, but now they mostly belong to jobbers, who go about threshing and cleaning grain at a certain price per bushel, thus saving the farmer the cost of a fanning mill and the labor of recleaning and screening as was the case until within the last few years. As the great mass of farmers on the prairie have no barns this system of threshing has great advantages and the farmer is at no outlay of capital for machines. Farmers who have large barns generally own a different style of machine, these are called horse-power and are adapted to one, two or three horses. Some of these have only separators attached so as to separate the straw from the chaff and grain. In this case the threshing progresses according to the demands of the stock for straw and chaff. . . . Steam threshers were introduced here and there before the close of the period, but they can hardly be said to have come into common use.”

⁶¹ N. Y. State Agric. Soc. *Transactions*, II (1842), p. 160.

⁶² U. S. *Census of 1880*, III, *Agriculture*, 520.

⁶³ *Loc. cit.*

CHAPTER XXVII.—CORN.

In 1840 corn was grown in every State east of the Mississippi River and in the States west of the river from Iowa south to Louisiana. Of the total corn crop of 1839, 46 per cent was produced in the South, 23 per cent in the border States and 31 per cent in the northern States. Tennessee and Kentucky were the two leading corn-growing States. The region of the Ohio River had become a prominent corn-producing center. (See fig. 74.) West

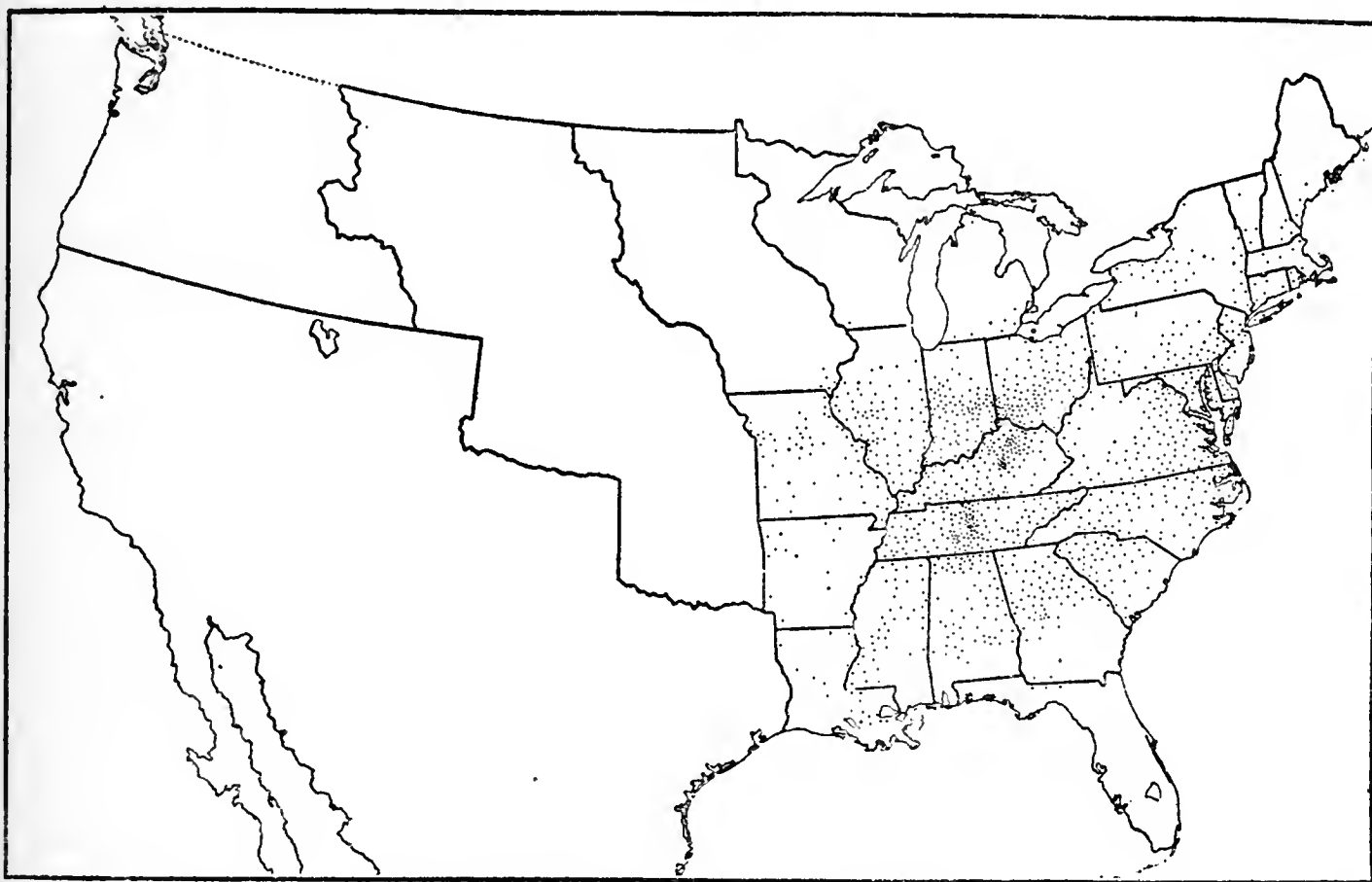


FIG. 74.—Corn, 1839. Each dot represents 300,000 bushels.

The limestone region of Kentucky and the bottom lands of the Miami, the Scioto, the Wabash, the Illinois and the Missouri rivers were prominent corn growing regions in 1840. In the eastern states corn production was generally increasing. In Maryland it was a leading crop.

of the Mississippi its cultivation was extending up the Des Moines River into central Iowa and along the Missouri River and its tributaries into western Missouri. In the territory west of central Ohio corn rather than wheat was the leading crop.

BETTER TILLAGE AND FERTILIZATION INCREASES CORN CROP IN THE EAST.

Maryland, Delaware, New Jersey, and southeastern Pennsylvania were the leading corn regions of the East in 1840. In New York, the wheat-growing section in the western part of the State and the valley of the Hudson in the east were the outstanding corn areas. During the forties the production of

corn considerably increased in all eastern States as a result of three causes: (1) a larger amount was planted in substitution for fallow; (2) more manure was applied and in greater variety; (3) more care was taken in tillage.

In central and western New York corn and roots were being substituted in place of the fallow in the rotation, as the low average yield of wheat made it no longer profitable to have that crop follow a summer fallow. In the northeastern States corn had its place in a more or less definite system of crop rotation with the application of large amounts of labor and manure. Manure was used on the corn land in large quantities and with peculiar care. 10 to 20 tons of farm manure to the acre was a usual amount. In Wayne County¹ it was reported that "corn success appears to be chiefly dependent on a heavy supply of manure, well mixed with the soil. . . ." Lime, gypsum, and ashes were extensively used. It was common practice to put a fork-full of well-rotted manure or compost into each hill, and usually, also, a little lime or plaster, at the time of planting, and again at the time of the first hoeing. As one farmer² described it: "I use some lime, ashes and plaster on corn ground, equal parts put in the hill when planting, about a gill in each hill, and again at the second hoeing put on about the same quantity."

Subsequent culture included two hand hoeings. The process was thus described by a writer from Steuben County in 1852:³

"As soon as the corn is of sufficient size, start the cultivator, and have a boy follow to see that there is none covered. Immediately after, put half a handful of unleached ashes on each hill. In about a week go through with the cultivator again, each way; follow with the hoe, and thin out the stalks to four in each hill. Cultivate and hoe again before tasselling."

Often the corn was harrowed as soon as up, a boy following to uncover and set up any fallen corn. For the second and third cultivation the plow was used, or occasionally the shovel plow, but both these implements were being gradually replaced by the cultivator. From Monroe County it was reported in 1853:⁴

"Of late, some farmers have adopted the plan of using the two-horse wheel cultivator to run through the rows. . . . The middle teeth are taken out, and two rows of corn are cultivated at once, . . ."

INCREASING CORN PRODUCTION IN NEW ENGLAND, 1840 TO 1850.

In New England the production of corn was increasing. The general failure of the crop during the years 1836 and 1837, the "cold years," had, however, caused some uncertainty as to the adaptability of corn to the New England climate. Western Massachusetts reported a decline in the raising of corn and wheat, because the high prices paid for wool had induced farmers to abandon entirely the growing of grain and to devote their attention to sheep-raising.⁵ In Maine, where the lumbering and ship-building industries furnished a good market, corn production was increasing. But climatic conditions

¹ N. Y. State Agric. Soc. *Transactions*, III (1843), p. 450.

² *Ibid.*, II (1842), p. 140.

³ U. S. Patent Office, *Annual Report 1852, Agriculture*, 195.

⁴ *Ibid.*, (1853), p. 115.

⁵ *2d Report, Agriculture of Massachusetts* (1838), p. 135.

would not allow the Maine farmer to rely upon corn as his principal source of income. In eastern Massachusetts much corn was grown as fodder for cattle in the late summer and fall when the pastures were low. The part of the

TABLE 40.—*Corn: Production in the United States.*

[Source: U. S. Censuses of 1840, 1850, and 1860.]

Geographic division and State.	1840.			1850.			1860.		
	Total (1,000 bu.)	Per capita (bu.)	Per cent of U. S. total.	Total (1,000 bu.)	Per capita (bu.)	Per cent of U. S. total.	Total (1,000 bu.)	Per capita (bu.)	Per cent of U. S. total.
United States	377,532	22.1	100.0	592,071	25.5	100.0	838,793	26.7	100.0
Geographic Division:									
New England	6,993	3.1	1.9	10,176	3.7	1.7	9,165	2.9	1.1
Middle Atlantic ...	29,574	6.5	7.8	46,453	7.9	7.8	57,981	7.8	6.9
East North Central.	87,115	29.8	23.1	177,320	39.2	29.9	280,269	40.5	33.4
West North Central	18,739	43.9	5.0	44,888	51.0	7.6	125,898	58.0	15.0
Mountain				375	5.1	.1	800	4.6	.1
Pacific				15	.1	.....	592	1.3	.1
New England:									
Maine	951	1.9	.3	1,750	3.0	.3	1,546	2.5	.2
New Hampshire ...	1,163	4.1	.3	1,574	4.9	.3	1,415	4.3	.2
Vermont	1,120	3.8	.3	2,032	6.5	.3	1,525	4.8	.2
Massachusetts	1,809	2.5	.5	2,346	2.4	.4	2,157	1.8	.3
Rhode Island	450	4.1	.1	539	3.7	.1	462	2.6	.....
Connecticut	1,500	4.8	.4	1,935	5.2	.3	2,060	4.5	.2
Middle Atlantic:									
New York	10,972	4.5	2.9	17,858	5.8	3.0	20,061	5.2	2.4
New Jersey	4,362	11.7	1.1	8,760	17.9	1.5	9,723	14.5	1.1
Pennsylvania	14,240	8.3	3.8	19,835	8.6	3.3	28,197	9.7	3.4
East North Central:									
Ohio	33,668	22.2	8.9	59,079	29.8	10.0	73,543	31.4	8.8
Indiana	28,156	41.1	7.5	52,964	53.6	8.9	71,589	53.0	8.5
Illinois	22,634	47.5	6.0	57,647	67.7	9.7	115,175	67.3	13.7
Michigan	2,277	10.7	.6	5,641	14.2	1.0	12,445	16.6	1.5
Wisconsin	380	12.3	.1	1,989	6.5	.3	7,517	9.7	.9
West North Central:									
Minnesota				17	2.8	.....	2,942	17.1	.4
Iowa	1,406	32.6	.4	8,657	45.0	1.5	42,411	62.8	5.0
Missouri	17,333	45.2	4.6	36,214	53.1	6.1	72,892	61.7	8.7
Dakota Territory ..							20	4.2	.....
Nebraska							1,482	51.4	.2
Kansas							6,151	57.4	.7
Mountain:									
New Mexico				365	5.9	.1	709	7.6	.1
Utah				10	.9	.....	91	2.2	.....
Nevada							^a	.....	.....
Pacific:									
Washington							5	.4	.....
Oregon				3	.2	.....	76	1.5	.....
California				12	.1	.....	511	1.3	.1

^a Less than 500 bushels.

corn-stalks above the ear, "when early cut and properly cured," was considered equal in feeding value to timothy and other hay.⁶ The New England corn crop of 1849, as reported by the census of 1850, showed a substantial increase over that of 1839, and was in fact the largest ever produced by that group of

⁶ U. S. Patent Office, *Annual Report 1849, Agriculture*, 223.

States on any census year. In Maine it was said that the failure of the wheat and potato crop had led to increased planting of corn.⁷ In Connecticut the increased use of lime and guano was said to have stimulated corn production.

MANAGEMENT AND HARVESTING OF CORN IN THE EAST.

A common rotation consisted of oats or potatoes, corn or oats, wheat or rye, grass until "bound out," but in general there was little uniformity in cropping. Stable manure at the rate of 20 to 40 cart loads to the acre was commonly applied. It was a disputed question whether it was best to follow the old method of manuring in the hill or to spread broadcast. Both methods were in common use, but the latter was said to be increasing in favor. For the former method a compost of muck and manure was commonly regarded as the best. On farms near the seashore, fish and seaweeds were used. In Connecticut, guano had come into use, and in this State even more care was given to the cultivation of the corn than in New York. Three cultivations and two or three hand hoeings were commonly given. A handful of ashes, lime, or plaster was added to each hill at the time of the first hoeing. Hilling at the last hoeing was the common practice.

Various methods of harvesting the crop were practiced in the East. In New York and Pennsylvania the common method was to cut up at the roots and shock in the fields until ready for husking. In New England, however, it was usual to top the corn, cutting off the stalks a few inches above the ear after the grain had reached a certain stage of ripeness. When wilted, the tops were bound into small bundles and placed in shocks to cure. The corn was left to ripen on the butt stalk, and when sufficiently dry was harvested, either by breaking off the ears with the husk or by cutting the stalk close to the ground. Little corn was sold, but the object was to raise enough for consumption on the farm.

CORN IN KENTUCKY.

The limestone area of Kentucky, which had long been an important agricultural center of the West, was noted for corn and livestock. Corn, alone, was worth more than all other crops in 1840. The crop rotation was more or less irregular. Some farmers in this part of Kentucky grew corn in rotation with wheat, which was sown among the standing corn in the autumn. Seeding down to clover was practiced by some of the better farmers, but the cultivating of corn on the same land, year after year, was all too common. The succession of corn crop was sometimes broken by seeding to bluegrass and leaving in pasture for several years. The prevailing custom of feeding corn and fodder to cattle grazing upon pasture, much of which was woodland, led to the exhaustion of the soil which was under cultivation, while the woodland received the manure.⁸

PLANTING AND TILLAGE METHODS.

The usual method of planting corn in Kentucky was to lay off the land into squares by running a light plow across the field both ways. The corn

⁷ *Ibid.*, 1851, p. 135.

⁸ Beatty, *Essays on Practical Agriculture*, XX, 64, 67.

was then dropped and covered with a hoe. When the corn was 4 or 5 inches high it was the common practice to run over the field with a large square harrow from which a few teeth had been removed. Subsequent cultivation included from two to six cultivations with the shovel-plow.⁹ One hand-hoeing usually followed the first cultivation. A considerable quantity of the corn raised in the bluegrass region was fed to cattle and hogs, though a large amount was also sold in the Cincinnati market¹⁰ whence it was largely shipped south to supply the plantation trade. Distilleries consumed a considerable quantity.¹¹

IN THE MIAMI AND SCIOTO VALLEYS IN OHIO.

Ohio, which stood fourth among the States in the production of corn in 1839, was first in 1849. The State was renowned for the great extent of its

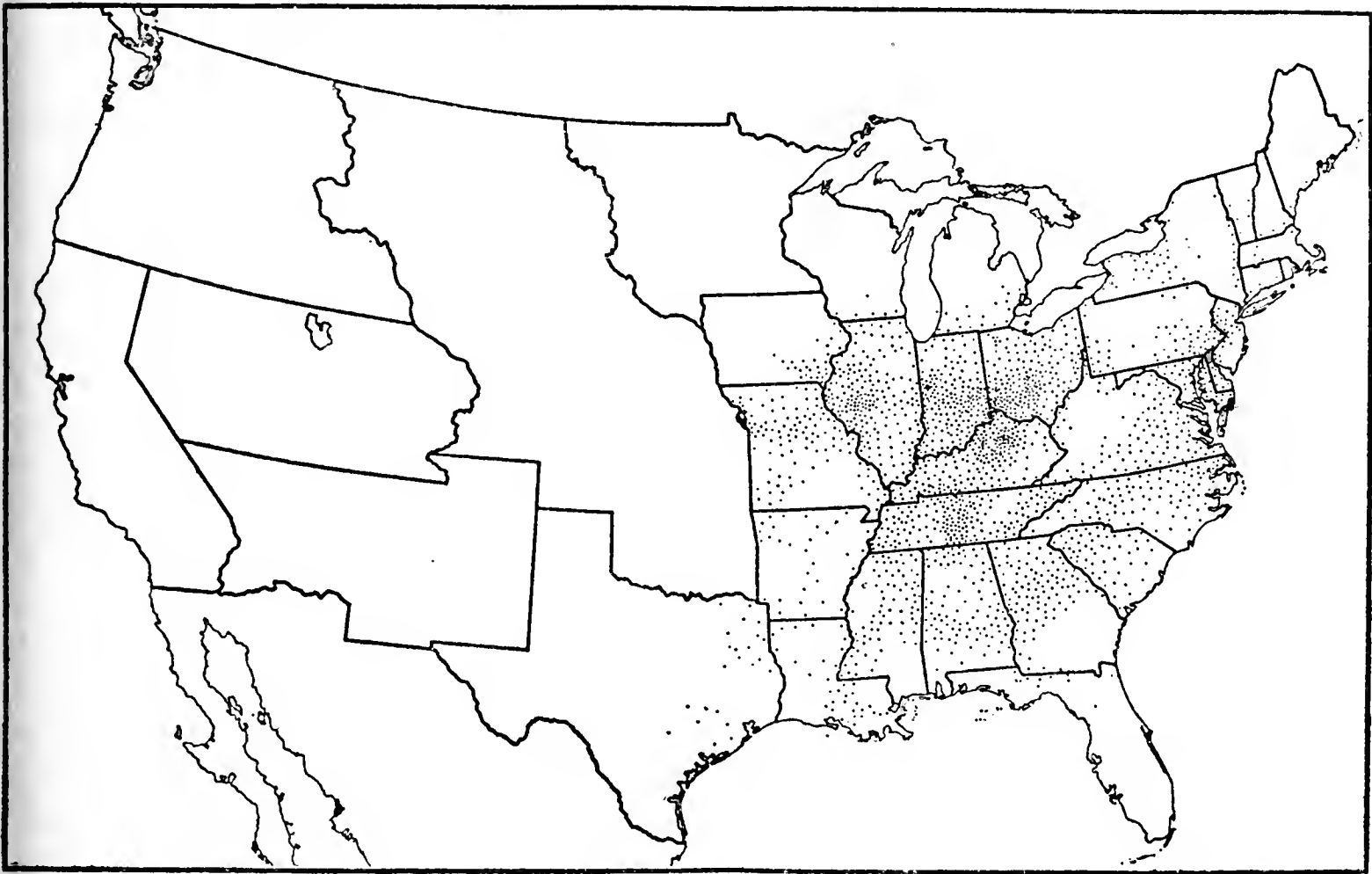


FIG. 75.—Corn, 1849. Each dot represents 300,000 bushels.

During the forties the production of corn considerably increased throughout the northern states. In the West corn production was extending north, into the wheat growing states of Michigan and Wisconsin, and west along the Des Moines river into Iowa.

rich alluvial land. The valleys of the Miami and the Scioto were regarded as among the most productive corn-growing regions of the country. As wheat was considered the staple by farmers on the hilly lands of eastern Ohio, so corn was the chief crop with the farmers who cultivated the alluvial soils. A few farmers were producing corn in rotation, but it was the common practice in this section for corn to follow corn on the same ground year after

⁹ *Ibid.*, 88, 90.

¹⁰ Beddall, *Blue Grass Region of Kentucky*, 98-100.

¹¹ Ohio State Board of Agriculture, *1st Annual Report* (1846), p. 28.

year. It was said in 1841 that some of the bottom lands on the Scioto had been cultivated for 40 years in corn without rotation or rest, and that they still continued to produce from 50 to 70 bushels to the acre. The region was thus described in 1851:¹²

“As far as the eye can stretch in the distance, nothing but corn and wheat fields are to be seen; and on some points in the Scioto valley as high as a thousand acres of corn may be seen in adjoining fields, belonging to some eight or ten different proprietors.”

From 100 to 200 acres of corn were reported to be frequently grown by rich landed proprietors. One Ross County farmer was said to have 1,800 acres exclusively in corn.¹³ The relatively large yield, the small amount of labor expended, and the comparative freedom from risk all combined to make the corn crop a favorite among those possessing alluvial soils.

GROWING CORN ON WHEAT FARMS IN EASTERN OHIO.

On the hill farms of eastern Ohio, where wheat was the staple crop, the yield of corn was reported to be much less than on the bottom lands and the cost of production was much greater.¹⁴ Here it was the usual practice among wheat farmers to grow corn or oats on a clover sod, to be succeeded by wheat, although some followed the corn crop with a summer fallow before seeding the wheat. On the valley lands the subsequent culture of corn consisted of two or three cultivations with the shovel plow or corn plow, for the hoe was seldom used. Where wheat was to be grown in the midst of the corn, the latter was given an extra cultivation with the cultivator or shovel plow. As in Kentucky, occasionally the harrow was used for the first cultivation.¹⁵ Among the wheat farmers of eastern Ohio, on the other hand, it was usual to cultivate from four to six times, running two or three times through the row at each cultivation, and to hand-hoe once. “We have no regular system of rotation in crops,” wrote a farmer from this region. “On our bottom lands, corn succeeds corn forever, or wheat and corn alternately forever, without any sensible diminution in the yield.”¹⁶ Another keen observer of Ohio agriculture wrote:¹⁷

“There are many things to admire and a still greater number to deplore in the methods of cultivation adopted by the corn-growing farmers of Ohio. They have well learned the secret of extracting from the soil, its fertilizing properties. This they do by deep plowing and by frequently working the corn with the one horse plow, or shovel plow. But when we have said this on the favorable side, but little more can be added, unless an expose be made of the wretched, barbarous systems that very generally prevail.”

Much of the corn raised in the southern part of Ohio found its way down the Miami and Scioto Rivers to Cincinnati, which was the corn market for the region comprising southwestern Ohio, southeastern Indiana, and north-central Kentucky. In eastern Ohio, where more of the land was given over to wheat-growing and grazing, the corn was largely fed to cattle and hogs.

¹² *Cultivator*, new series, VIII (1851), p. 290.

¹³ *Ibid.*, VII (1850), p. 185.

¹⁴ U. S. Patent Office, *Annual Report* 1845, p. 179.

¹⁵ *Cultivator*, new series, VI (1849), p. 90.

¹⁶ U. S. Patent Office, *Annual Report* 1852, *Agriculture*, 252.

¹⁷ *Cultivator*, new series, VIII (1851), p. 291.

CORN AS A FIRST CROP ON PRAIRIE FARMS.

West of Indiana, up to 1840, the open prairies of Illinois, Iowa, and Missouri, which were later to become the most productive corn-producing sections of the country, had been generally avoided. The valleys of the Wabash, the Illinois and the Missouri Rivers were still the centers of corn production in the West. (See fig. 74.) During the forties the corn area in the West rapidly expanded, pushing northward into the prairies of northern Illinois and Indiana. In 1850 with the exception of Michigan, which was essentially a wheat-growing section, and of Wisconsin, where farmers were raising little else but wheat, corn was the great staple in the States west of Ohio.

Corn could be grown with success on a newly-broken prairie-sod where the wheat crop was rarely successful, and so in the West the prairie land was usually planted to corn the first year. The immigrant who arrived in the spring was thus able with but little care or expense to obtain a crop of corn the first year. It was usual to turn the sod the latter part of May or early part of June to the depth of 2 or 3 inches. The furrow-slice was laid as smoothly as possible to prevent the grass from growing up through the seams, and in every third or fourth furrow corn was dropped to be covered by the succeeding furrow slice. Another method was to pass along the furrow-slice with an axe, a pointed stick, or similar instrument, making holes at intervals in the sod, into which were dropped 3 or 4 grains of corn. The holes were then covered with a brush of the foot.

It was not unusual to see from 4 to 6 teams, with 5 yoke of cattle and a boy to help drive at each plow, breaking up the sod. Two boys followed after the teams, dropping the corn, which was covered by the sod. Between $1\frac{1}{2}$ and 2 acres of corn a day would be planted in this way by a man with 4 or 5 yoke of oxen. The first crop was expected to pay the expense of breaking. Yields ranged 15 to 45 bushels an acre, but most of the reports were near the lower figure.¹⁸ One writer of the time thus described the method of planting:¹⁹

"In every third or fourth furrow corn is dropped at the outer side of the furrow. . . . This is buried up by the succeeding furrow, and the corn springs up through the partial crevice. . . . The land thus ploughed is remarkably free from weeds, and the corn in ordinary seasons grows rapidly. No hoeing is needed, and nothing is done to the crop until the time of gathering arrives, when often from thirty to sixty bushels of good corn are obtained. The cost of dropping the corn is ten per cents per acre; one small boy attends three ploughs. . . . If the sod crop is put in early, it can be cut off in the fall in sufficient time to harrow in the crop of wheat; this is done without any further plowing and gives generally the largest and best wheat crop raised on the land."

"No manuring, no hoeing, or but very slight," wrote another,²⁰ "no harvesting in many cases, that being attended to by the hogs. . . ."

METHODS OF PLANTING AND CULTIVATING.

On stubble ground it was a common practice to list the land for corn. A plow passing along the field threw up a furrow and returning threw up an-

¹⁸ U. S. Patent Office, *Annual Report 1852, Agriculture*, 291.

¹⁹ *Ibid.*, (1845), p. 383.

²⁰ *Cultivator*, X (1843), p. 81.

other against the first. The corn was then planted on the top of the ridge. After planting, the intervening spaces were broken up. On the bottom lands it was common to turn two furrows together and leave them until ready to plant, when two other furrows were added, forming alternate ridges and valleys. In this case the corn was planted in the valleys.²¹ Remarks one:²²

“The advantage of listing is that it enables a man to put in more corn than in the ordinary way; and as most men can tend more corn than they can put in, this is considered a gain. . . . Those who advocate the listing practice are generally energetic men, having new ground. In the hands of a slow man, the plan is likely to succeed poorly.”

The corn was dropped by hand. Although many corn-planting machines and attachments were being tried, no satisfactory machine had yet been devised which would plant corn in hills, and planting in drills was not considered satisfactory. According to the common method of planting, the field was furrowed both ways with a small plow, and the corn, having been dropped at the intersections, was covered either by hand or with a harrow, or by running a bull-tongue plow along the edge of the furrow, thus turning the earth back over the seed. Ingenious farmers had their own contrivances for marking the field and covering the seed.

Corn was commonly cultivated two or three times, usually with a shovel-plow, often with the one-horse plow, and in a few cases with a steel-tooth cultivator. In Sangamon County, Illinois, one of the largest corn-producing counties, the common method of culture was thus described:²³

“When the corn is three or four inches high, it is ploughed with a small plough, throwing dirt from it. In eight or ten days it is cross-ploughed, with three furrows in a row; and in ten or fifteen days repeat the operation the other way, and so make the crop.”

A farmer from Macoupin County reported that it was his practice to run a light 2-horse harrow, from which the front tooth had been removed, straddle of the row as soon as the corn was 2 or 3 inches high. The cultivator then followed twice in a row, then the bull-tongue plow, and finally the cultivator again, once or twice.²⁴

A large land owner of Indiana, H. L. Ellsworth, reported in 1855:²⁵

“I have been able to hire land, tilled with a crop of corn, at \$2.50 to \$3.00 per acre; the average yield being 50 bushels. The cost per bushel, standing in the field, is about 5 to 6 cents only, exclusive of the rent of the land.”

An occasional farmer applied manure to his land, but it was by no means a common practice. A correspondent writes:²⁶

“But little attention is paid to saving or applying manure; we are aware of its utility; we haul it to our fields if we have time; the low price of lands and the high price of labor will not warrant the operation in all cases.”

²¹ U. S. Patent Office, *Annual Report* 1852, *Agriculture*, 291.

²² *Ibid.*, 292.

²³ U. S. Patent Office, *Annual Report* 1850, *Agriculture*, 20.

²⁴ *Prairie Farmer*, XI (1851), p. 222.

²⁵ U. S. Patent Office, *Annual Report* 1845, p. 385.

²⁶ *Ibid.*, 1852, *Agriculture*, 278.

DIFFICULTIES OF GROWING CORN ON THE PRAIRIES.

Some of the many difficulties encountered by the corn-grower on the prairies were described as follows by a writer from Cook County, Illinois, in 1851:²⁷

"The general complaint is that it often fails to come up when planted, and should it happen to come up the black birds, crows, cranes, and squirrels, or some other depredators, come to claim their share; and in a dry season it will dry up, and in a wet season it is 'drowned out,' and, should there be by chance any left to grow the frost often comes in the fall before it is ripe and destroys it, so they are only sure of a small crop; and the consequence is, the country is condemned as not being fit for raising corn, when in most cases the fault is in the cultivator, and not in the climate or soil."

The gophers in Wisconsin²⁸ and the black birds and squirrels in Illinois were constant menaces. Many northern farmers, following the advice of southern correspondents in the agricultural journals, planted their corn shallow. Then, losing their first crop by frost, which penetrated to the kernel and killed the crop, they declared that book farming got them into trouble.²⁹

HARVESTING PRACTICES.

The method of harvesting varied. In Kentucky, the corn was cut and put in shocks containing 144 hills. In the wheat region of Ohio, after the corn had been cut by hand and set in shocks ready for husking, the ground was plowed and seeded to wheat. A few farmers followed the New England custom of topping the corn.³⁰ In the "corn belt" of the West the ears were pulled from the stalks and comparatively little corn was cut. In livestock sections the farmers generally fed the corn on the ground, and thus avoided the labor of cutting up, husking, and cribbing.

THE DECADE 1850 TO 1860.

The corn crop of 1859 was 40 per cent greater than that of 1849. (See fig. 76, p. 348.) The New England States, with the exception of Connecticut, showed a decrease in production, New York showed a small increase. From Pennsylvania westward to Indiana the increase had been general. Farther west the gain in production had been more rapid, particularly in Illinois, Iowa, and Missouri. In Kansas and Nebraska, considerable corn was produced in 1859 along the Mississippi and Kansas Rivers. In Wisconsin corn production was slowly increasing. In 1840 the leading corn-producing States of the Union had been Tennessee, Kentucky, and Virginia, in the order named. By 1860 the leading states were Illinois, Ohio, and Missouri. Thus was the center of corn production moving westward. In 1839 the northern States, exclusive of the border States, had produced 31 per cent of the total corn crop; in 1859 they produced 47 per cent of the total.

In New England, the census report shows a decline in corn production during the fifties. While the New England farmer estimated his cost of corn

²⁷ *Prairie Farmer*, XI (1851), p. 183.

²⁸ *Ibid.*, IV (1844), p. 67.

²⁹ *Ibid.*, VIII (1848), p. 152.

³⁰ U. S. Patent Office, *Annual Report 1851, Agriculture*, 375.

production at from 40 to 50 cents a bushel, the Illinois farmer generally estimated his cost at from 12 to 16 cents; a difference in cost which was beginning to be felt by the former. A Massachusetts writer in 1849 reported: ³¹

"Some are of the opinion that, with the present high cost of labor and manure, we cannot compete with western farmers in raising corn; that, with the increased facilities for transportation, we shall soon be run off the track; that we had better buy our corn, than raise it. . . . Taking the average price of corn, for the last six years, we may safely estimate that a bushel of corn is worth forty cents. I am aware that it usually costs nearly this sum to raise corn; but then it is one of the best preparatory crops for all others, and the fodder is of much value. The corn crop possesses some advantages over most other crops. . . . The main object of most farmers, in cultivating their land is to prepare it to produce more grass."

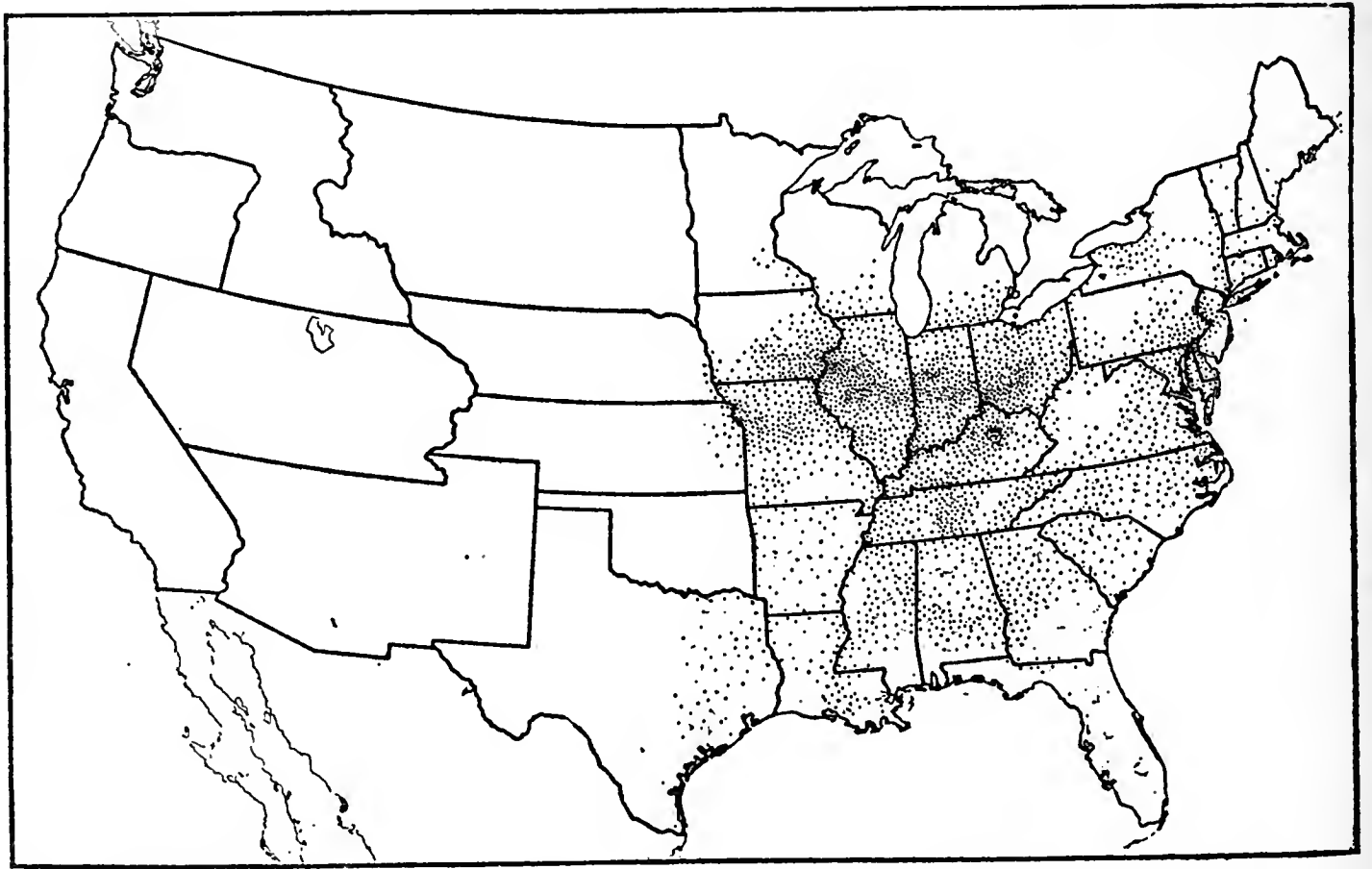


FIG. 76.—Corn, 1859. Each dot represents 300,000 bushels.

During the fifties the area of corn production was pushed rapidly westward. Its production was rapidly increasing on the prairies. In New England corn growing was declining.

There was a tendency to seed more acres in oats and less in corn. Important changes in methods of cultivation were the increasing use of machinery and manure. The New England farmer was exerting every means to increase his supply of manure. In addition, muck, guano, lime, superphosphate of lime, and ashes were widely used on corn land. Corn planters had not yet come into general use, but the horse-hoe, or cultivator, was used upon most farms.³² From Rhode Island it was reported that the introduction of the planter and cultivator was leading to a closer planting of corn. Whereas formerly it was planted $3\frac{1}{2}$ feet each way, it was now planted in rows 3 feet apart and from 2 to $2\frac{1}{2}$ feet apart in the rows.³³ In Maryland, Delaware, New Jersey, and eastern Pennsylvania the use of guano, lime, and superphosphate was rapidly

³¹ *Massachusetts, Returns of the Agricultural Societies* (1849), p. 118.

³² *Maine Board of Agriculture, 5th Annual Report* (1860), p. 176.

³³ U. S. Patent Office, *Annual Report 1855, Agriculture*, 180.

increasing. In Kentucky the cropping system, which was well established prior to 1840, remained unchanged; corn production had increased but little since 1860.

In the prairie region, the corn area increased with the expansion of settlement into what is now known as the Corn Belt of the United States. Comparatively little corn was sold; it was marketed mostly in the form of cattle and hogs. It is for this reason that, although Ohio, Kentucky, Indiana, Illinois, Iowa, and Missouri were producing from 5 to 18 bushels of corn to every bushel of wheat, the marketing of wheat attracted more attention than that of corn. In the Western States, with the exception of Wisconsin and Michigan, corn was the great staple during the period from 1840 to 1860. The spring-wheat region of the Northwest had not yet been settled. As in the East, the principal changes in methods of production during the decade were the adoption of improved planting and cultivating machinery.

CHAPTER XXVIII.—THE MINOR CEREALS.

OATS.

Production of oats was rather generally distributed over the agricultural area of the North in 1840. In New York, Pennsylvania, and New England more oats were raised than corn. In the general farming regions of eastern Ohio, oats were a leading crop in the field system; west of Ohio oats were a relatively unimportant crop. New York, Pennsylvania, and Ohio, in the order named, raised the largest crops of oats in 1839, when they produced over 45 per cent of the United States total. (See fig. 77.) Oats were largely raised for farm consumption rather than for sale.

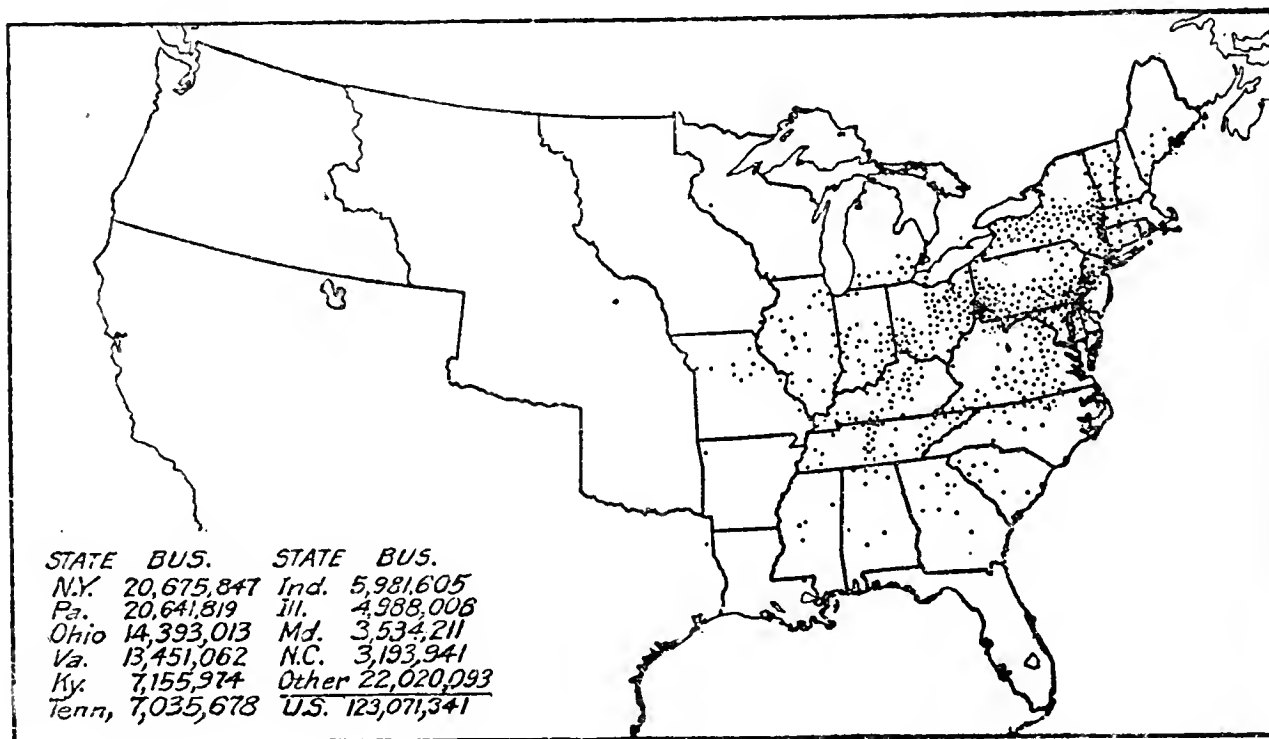


FIG. 77.—Oats, 1839. Each dot represents 200,000 bushels.

Oats were quite generally grown throughout the agricultural area of the North. They were largely fed on the farm.

IN NEW ENGLAND AND NEW YORK.

The New England crop rotation usually included one or two crops of oats. They were sometimes sown as the first crop in the rotation, sometimes after corn or potatoes. Often oats was the last crop, before the land was laid down to grass, the seed having been sown among the oats.¹ In the three northern New England States oats were regarded with more favor than in the three southern States, where corn could be grown to better advantage. In New York the production of oats was general. They were usually grown in rotation with other crops, frequently as a second crop in the rotation.² It was reported in 1849:

“In most parts of western New York oats are a secondary crop in importance, and are merely grown for home consumption. But in some counties where wheat is not

¹ *2d Report, Agriculture of Massachusetts* (1838), p. 17.

² U. S. Patent Office, *Annual Report 1849, Agriculture*, 288.

raised oats are a prominent crop. . . . The yield under good culture and on rich land varies from sixty to one hundred bushels. . . . They are generally grown on poor lands and in a slovenly manner and in such cases produce about thirty bushels."

TABLE 41.—Oats: Production in the United States.

[Source: U. S. censuses, 1840, 1850, and 1860.]

Geographic division and State.	1840.			1850.			1860.		
	Total (1,000 bu.)	Per capita (bu.)	Per cent of U. S. total.	Total (1,000 bu.)	Per capita (bu.)	Per cent of U. S. total.	Total (1,000 bu.)	Per capita (bu.)	Per cent of U. S. total.
United States.....	123,071	7.2	100.0	146,584	6.3	100.0	172,643	5.5	100.0
Geographic Division:									
New England	7,540	3.4	6.0	8,101	3.0	5.5	10,895	3.5	6.3
Middle Atlantic ...	44,401	9.8	36.1	51,469	8.7	35.1	67,101	9.0	38.9
East North Central.	27,883	9.5	22.7	35,496	7.8	24.2	51,043	7.4	29.6
West North Central	2,451	5.7	2.0	6,833	7.8	4.7	11,910	5.5	6.9
Mountain				11			72		
Pacific				61	1.0		2,063	4.6	1.2
New England:									
Maine	1,076	2.1	.9	2,181	3.7	1.5	2,989	4.8	1.7
New Hampshire ...	1,296	4.6	1.0	973	3.0	.7	1,329	4.0	.8
Vermont	2,223	7.6	1.8	2,308	7.3	1.6	3,630	11.5	2.1
Massachusetts	1,320	1.8	1.1	1,165	1.1	.8	1,180	1.0	.7
Rhode Island	172	1.6	.1	215	1.5	.1	245	1.4	.1
Connecticut	1,453	4.7	1.2	1,259	3.4	.8	1,522	3.3	.9
Middle Atlantic:									
New York	20,676	8.5	16.8	26,553	8.6	18.1	35,175	9.1	20.4
New Jersey	3,083	8.3	2.5	3,378	6.9	2.3	4,539	6.8	2.6
Pennsylvania	20,642	12.0	16.8	21,538	9.3	14.7	27,387	9.4	15.9
East North Central:									
Ohio	14,393	9.4	11.7	13,473	6.8	9.2	15,409	6.6	8.9
Indiana	5,982	8.7	4.9	5,655	5.7	3.9	5,318	3.9	3.1
Illinois	4,988	10.5	4.1	10,087	11.8	6.9	15,220	8.9	8.8
Michigan	2,114	10.0	1.7	2,866	7.2	1.9	4,037	5.4	2.4
Wisconsin	406	13.1	.3	3,415	11.2	2.3	11,059	14.2	6.4
West North Central:									
Minnesota				31	5.0		2,176	12.6	1.3
Iowa	216	5.0	.2	1,524	7.9	1.1	5,888	8.7	3.4
Missouri	2,235	5.8	1.8	5,278	7.7	3.6	3,681	3.1	2.1
Dakota Territory ..							3	1.0	
Nebraska							74	2.6	
Kansas							88	1.0	.1
Mountain:									
New Mexico							8		
Utah				11	1.0		63	1.6	
Nevada							1		
Pacific:									
Washington							134	11.6	.1
Oregon				61	4.6		886	16.9	.5
California							1,043	2.7	.6

In Erie County oats were often the main crop on farms having shale land. Many farmers were said to have "cleared and paid for their farms, built good houses and barns and surrounded themselves with the reasonable comforts of life by means of the oat crop."³ In the Hudson Valley in eastern

³ N. Y. State Agric. Soc. *Transactions* (1843), p. 440.

New York, where a rotation having but little wheat was commonly practiced, oats were the leading grain crop. In Dutchess County, the leading oat-producing county in the state, a rotation of corn, roots, oats, and grass was reported.⁴ In Orange County, the best crop of oats offered for premium to the agricultural society in 1844 yielded 108 bushels to the acre; the second best 74 bushels.⁵ In New Jersey farmers were said to be sowing more oats and buckwheat and having less corn and fallow.⁶

The census of 1850 showed a relatively small increase in oat production—from 123,000,000 bushels in 1839 to 146,000,000 bushels. Maine and New York were the States of greatest increase in the East, and Illinois, Wisconsin, Iowa, and Missouri in the West. (See figs. 77 and 78.)

In Maine, the production of oats was said to have become decidedly greater because of the failure of potatoes and wheat.⁷ A correspondent reported in

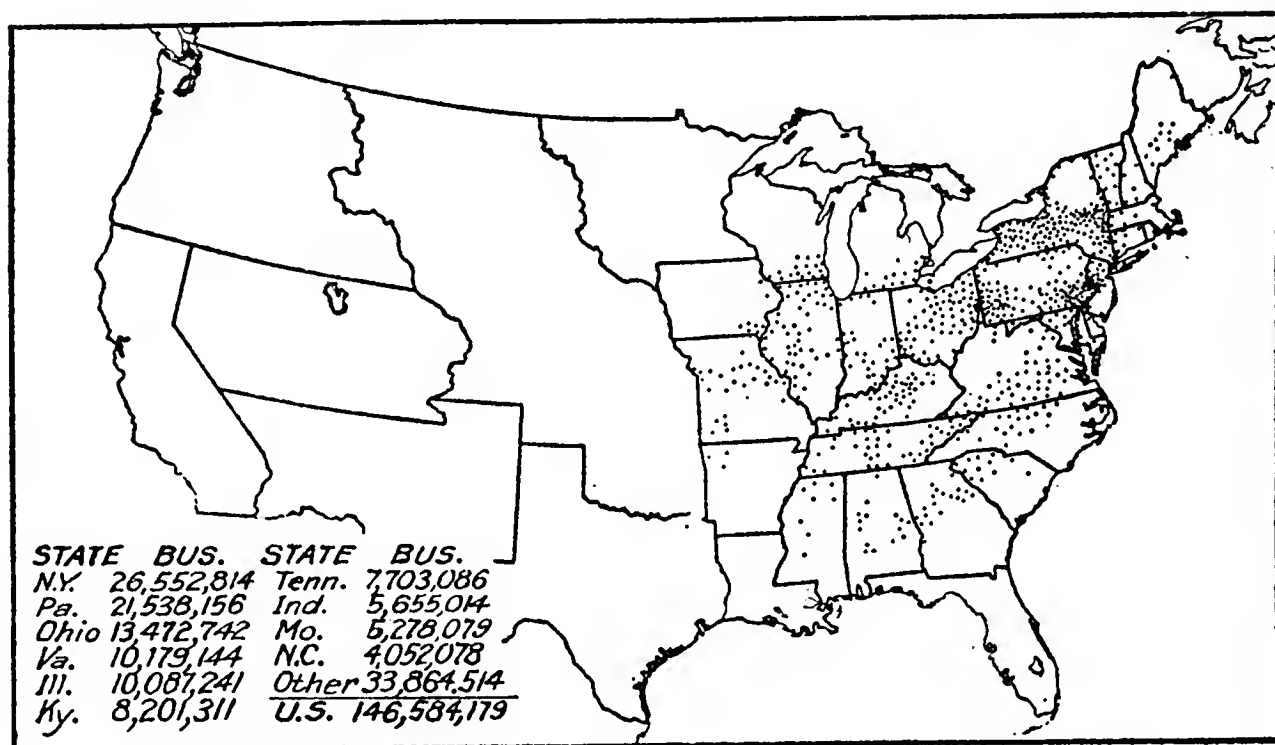


FIG. 78.—Oats, 1849. Each dot represents 200,000 bushels.

On prairie farms oats were a usual crop, but they did not occupy such a prominent place as wheat or corn.

1844:⁸ "This grain is extensively cultivated. Large quantities are used in the logging swamps, on stage routes, in stables, and a great amount is shipped." Another correspondent from Somerset County reported⁹ in 1851 that "A mixed crop of oats and peas is raised here in large quantities; and used for making pork, beef and provender for teams lumbering." In New York and Pennsylvania it was said in 1850 that oats were taking the place formerly occupied by the summer fallow.¹⁰

⁴ *Cultivator*, new series, I (1844), p. 107.

⁵ U. S. Patent Office, *Annual Reports* 1844, p. 50; 1849, p. 288.

⁶ *Cultivator*, X (1843), p. 113.

⁷ U. S. Patent Office, *Annual Reports* 1848, *Agriculture*, 551; 1844, p. 49; 1848, p. 343; 1851, p. 135.

⁸ *Ibid.*, 1844, p. 49.

⁹ *Ibid.*, 1851, p. 135.

¹⁰ U. S. *Census of 1860, Agriculture*, p. lxxvii.

In Maryland and Delaware the census of 1850 reported a considerable decline in oat production during the previous decade. Oats had thrived on the depleted soils, but with increased attention to rotation and fertilization many farmers were endeavoring to substitute wheat, corn, or potatoes for oats, in the hope of thereby securing greater profits.¹¹ In Ohio, the culture of the oat crop was said to be growing unpopular among the best farmers, who believed that oats impoverished the land more than corn.¹² In the corn region of the West oats were regarded with little favor. One great difficulty with the crop was the tendency to lodge when planted on rich prairie soils or on the fertile bottomlands.¹³ In the wheat region poor crops from 1847 to 1853 were leading to increased attention to a rotation in which oats had an important place.

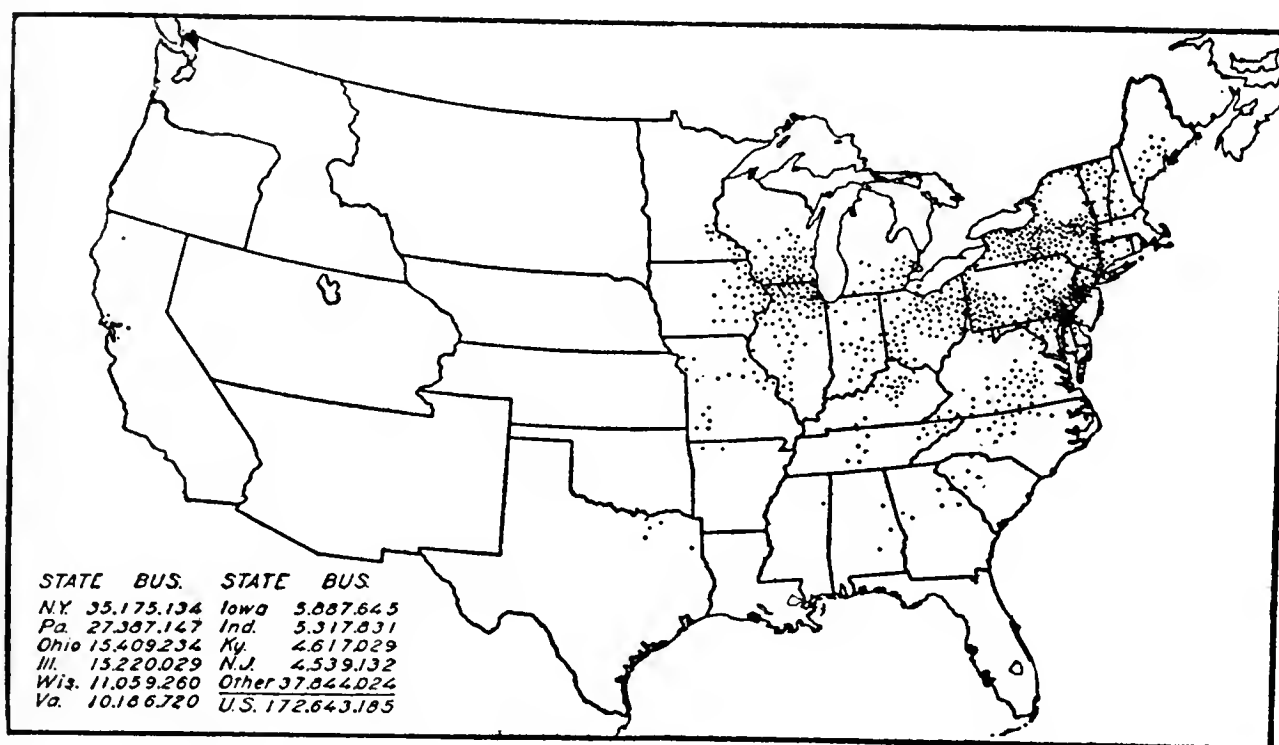


FIG. 79.—Oats, 1859. Each dot represents 200,000 bushels.

In the West the wheat farms of Wisconsin and Illinois also grew many oats. There was no large area in which the production of oats was concentrated.

Oats were harvested and threshed in much the same way as wheat. Inasmuch as they were commonly grown in small quantities, they were more frequently cut with the cradle and threshed with the flail.

RYE.

In 1840, eastern Pennsylvania, eastern New York, and New Jersey comprised the leading rye-producing sections of the country. Pennsylvania alone produced one-third of the total rye crop of the country, and with New York over one-half of the total. New Jersey ranked third, Virginia fourth, Kentucky fifth, and Ohio sixth. West of Ohio very little rye was grown. In the southern New England States rye was more commonly grown than wheat.¹⁴ (See figs. 80 and 81.)

¹¹ U. S. Patent Office, *Annual Report 1852, Agriculture*, p. 176; 1849, p. 115.

¹² *Ibid.*, 1852, p. 258.

¹³ *Ibid.*, 1852, p. 343; 1849, p. 181.

¹⁴ *Ibid.*, 1847, p. 124.

In 1849 it was apparent that the national production of rye had declined. For that year all of the northern States as far west as Indiana, with the exception of New York, reported a lower total production than for 1839. Especially noticeable was the decline of eastern Pennsylvania, New Jersey, and Maryland, where rye production had formerly been concentrated.¹⁵ In this section rye was usually grown in small fields on the poorer soils, and was frequently substituted for wheat after that crop ceased to thrive. But with the introduction of new varieties of wheat, and with the improvement of eastern soils, wheat recovered some of its popularity and the culture of rye declined.¹⁶

In New England, rye was said to be cultivated by only few farmers and chiefly on wornout pasture land or on newly cleared land.¹⁷ From Vermont it was reported:¹⁸

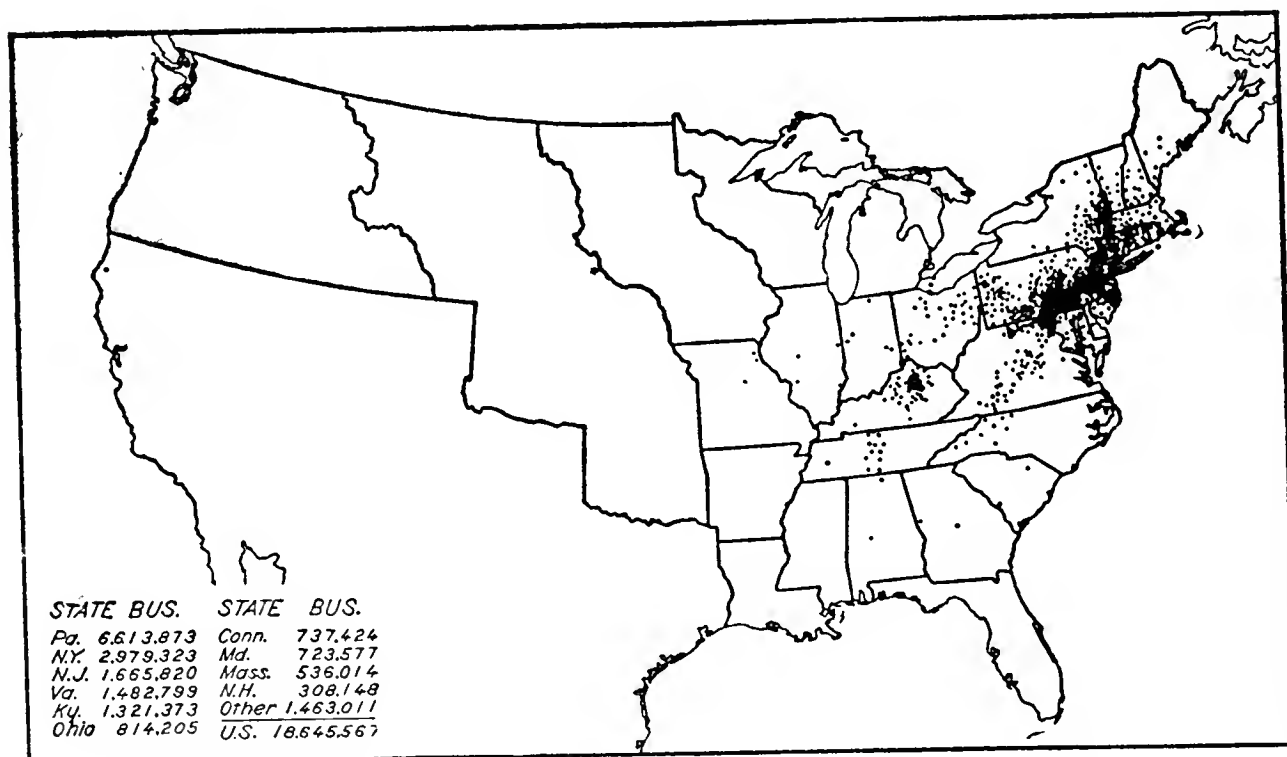


FIG. 80.—Rye, 1839. Each dot represents 25,000 bushels.

Rye was extensively grown in the North Atlantic states where wheat had been yielding poor crops. Eastern Pennsylvania, New Jersey and the Hudson valley region of New York constituted the principal rye producing region.

“Rye has considerably diminished within the last twenty years, as it is not now considered so important an article for family consumption since western flour has become cheaper and a common article of consumption and a necessity in most families; and the praiseworthy and philanthropic spirit of the age having banished the *spirits* formerly extracted from this grain, it is no longer cultivated as a source of profit. . . .”

But Rensselaer County, New York, one of the leading rye-growing counties, reported in 1833:¹⁹ “Large quantities of rye are cultivated in this county, for the Baltimore market, where it is mostly distilled. It is one of the most profitable crops we raise.”

In eastern Pennsylvania, New Jersey, and Maryland the decline in rye production was ascribed by many to frequent attacks of rust, the improvement

¹⁵ U. S. Census of 1860, *Agriculture*, p. lx.

¹⁶ U. S. Patent Office, *Annual Report* 1849, *Agriculture*, 123.

¹⁷ *Ibid.*, 1850, *Agriculture*, p. 270; 1852, p. 126.

¹⁸ *Ibid.*, 1849, pp. 86, 91.

¹⁹ *Ibid.*, (1853, *Agriculture*), p. 155.

of farming methods, the introduction of Mediterranean wheat, and the consequent increase in the wheat yield.²⁰ In Harford County, Maryland, the rye crop was said to have been abandoned, because of failure for the past few

TABLE 42.—*Rye: Production in the United States.*

[Source: U. S. censuses of 1840, 1850 and 1860.]

Geographic division and State.	1840.			1850.			1860.		
	Total (1,000 bu.)	Per 1,000 population (bu.)	Per cent of U. S. total.	Total (1,000 bu.)	Per 1,000 population (bu.)	Per cent of U. S. total.	Total (1,000 bu.)	Per 1,000 population (bu.)	Per cent of U. S. total.
United States	18,646	1,092	100.0	14,189	612	100.0	21,101	671	100.0
Geographic Division:									
New England	1,985	888	10.6	1,571	576	11.1	1,426	455	6.8
Middle Atlantic ...	11,259	2,487	60.4	10,209	1,731	72.0	11,701	1,569	55.5
East North Central.	1,068	365	5.7	775	171	5.5	3,501	505	16.6
West North Central	72	170	.4	63	72	.4	605	279	2.9
Mountain .....	.....	.....	.....	^a	3	.....	2	12	.....
Pacific .....	.....	.....	.....	^a	1	.....	55	124	.3
New England:									
Maine	138	275	.7	103	176	.7	124	196	.6
New Hampshire ...	308	1,083	1.7	183	576	1.3	128	393	.6
Vermont	231	791	1.2	176	561	1.3	139	442	.7
Massachusetts	536	727	2.9	481	484	3.4	388	315	1.9
Rhode Island	35	317	.2	27	179	.2	28	162	.1
Connecticut	737	2,379	3.9	601	1,621	4.2	619	1,345	2.9
Middle Atlantic:									
New York	2,979	1,227	16.0	4,148	1,339	29.2	4,787	1,234	22.7
New Jersey	1,666	4,462	8.9	1,256	2,565	8.9	1,439	2,142	6.8
Pennsylvania	6,614	3,836	35.5	4,805	2,079	33.9	5,475	1,884	26.0
East North Central:									
Ohio	814	536	4.3	426	215	3.0	684	292	3.3
Indiana	130	189	.7	79	80	.6	463	343	2.2
Illinois	88	185	.5	83	98	.6	951	556	4.5
Michigan	34	161	.2	106	266	.7	514	686	2.4
Wisconsin	2	63	.....	81	266	.6	889	1,145	4.2
West North Central:									
Minnesota .....	.....	.....	.....	^a	21	.....	121	706	.6
Iowa	4	88	.....	19	98	.1	183	271	.9
Missouri	68	179	.4	44	65	.3	293	248	1.4
Dakota Territory ..	.....	.....	.....	.....	.....	.....	1	145	.....
Nebraska .....	.....	.....	.....	.....	.....	.....	3	87	.....
Kansas .....	.....	.....	.....	.....	.....	.....	4	36	.....
Mountain:									
New Mexico .....	.....	.....	.....	.....	.....	.....	1	14	.....
Utah .....	.....	.....	.....	^a	18	.....	1	19	.....
Nevada .....	.....	.....	.....	.....	.....	.....	^a	14	.....
Pacific:									
Washington .....	.....	.....	.....	.....	.....	.....	^a	12	.....
Oregon .....	.....	.....	.....	^a	8	.....	3	52	.....
California .....	.....	.....	.....	.....	.....	.....	52	137	.3

Less than 500 bushels.

years.²¹ From Burlington, New Jersey, it was reported²² that the rye crop had "disappeared rapidly from the fields since the introduction of Mediter-

²⁰ *Ibid.*, 1849, p. 123.

²¹ *Ibid.*, 1851, *Agriculture*, p. 267.

²² *Ibid.*, 1850, p. 202.

anean wheat, which succeeds admirably on light sandy soils, yielding fifty per cent more in quantity than rye, and commanding thirty-three per cent more in price."

In the West, rye was largely used as a fall or spring pasture for livestock. It was frequently sown in the midst of corn at the last cultivation and "hogged down to the ground," in the fall.²³ In Ross County, Ohio, in 1848, its cultivation was reported to have been almost abandoned by the farmers in consequence of repeated failures since 1840, the cause of which was reported to be as much a mystery as the potato rot.²⁴ In Wisconsin its culture was reported to be chiefly confined to the German settlers.²⁵

By 1859, the production of rye showed considerable increase. In New England there had been a small decrease, which was more than offset by the

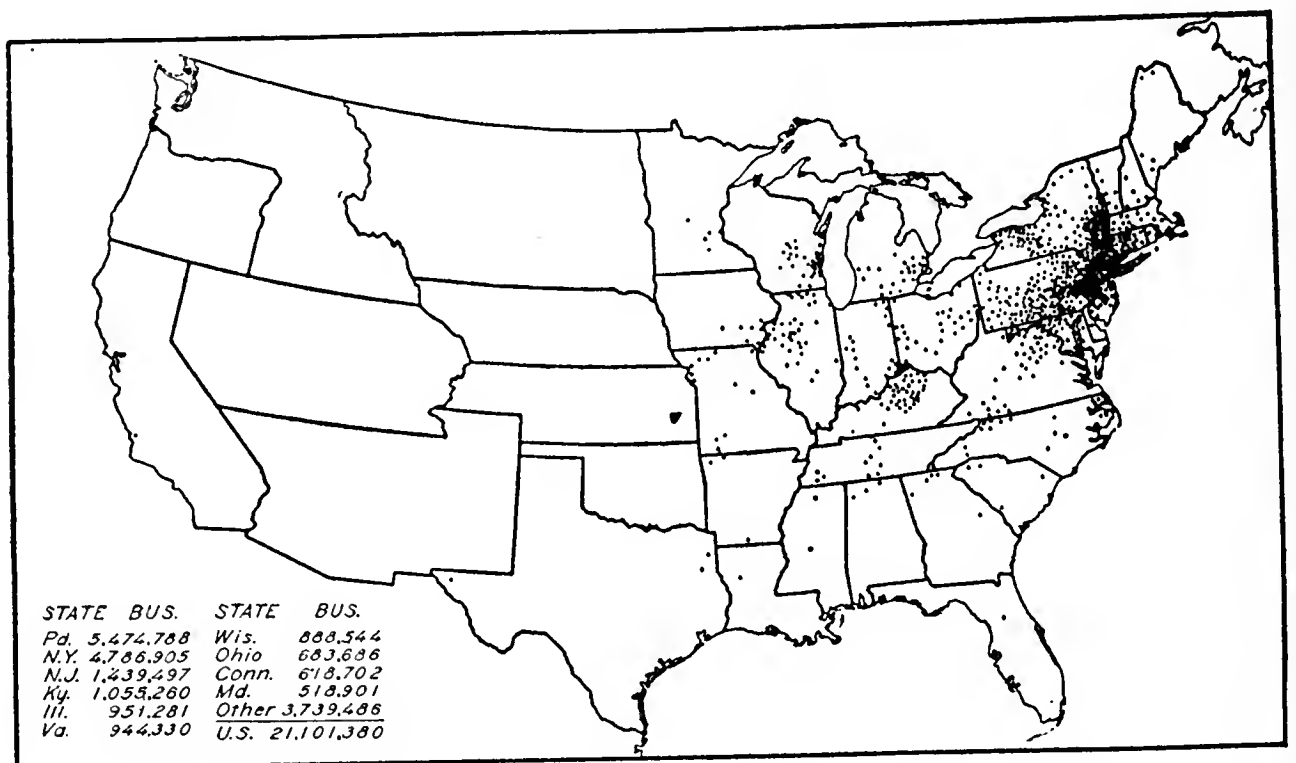


FIG. 81.—Rye, 1859. Each dot represents 25,000 bushels.

The area in rye increased but little from 1840 to 1860. The increase was mainly in the West where rye was only an occasional crop.

general increase in the West. West of Ohio the increase had been large, especially in Illinois and Wisconsin, each of which was reported to have raised about 900,000 bushels in 1859.²⁶ (See fig. 81.)

BARLEY.

The relative importance of barley and oats in the United States in 1839, expressed in bushels, was as 1 is to 30. Barley was the least important of the cereals. More than half of the crop was produced in New York. The barley crop increased fourfold during the 20 years from 1840 to 1860, or from 4,161,500 bushels to 15,826,000 bushels. The States contributing most to the increase were California, Ohio, Illinois, and Wisconsin. Important increases

²³ *Ibid.*, 1852, *Agriculture*, pp. 262, 295.

²⁴ Ohio State Board of Agric. *3d Annual Report* (1848), p. 103.

²⁵ *Prairie Farmer*, VIII (1848), p. 35.

²⁶ *U. S. Census of 1860, Agriculture*, pp. lx, lxii.

occurred also in New York, Maine, and Pennsylvania. A large part of the increase came from new territory; nevertheless, owing to difficulties in wheat-growing in the East, barley gained in most of the eastern States.²⁷ In western

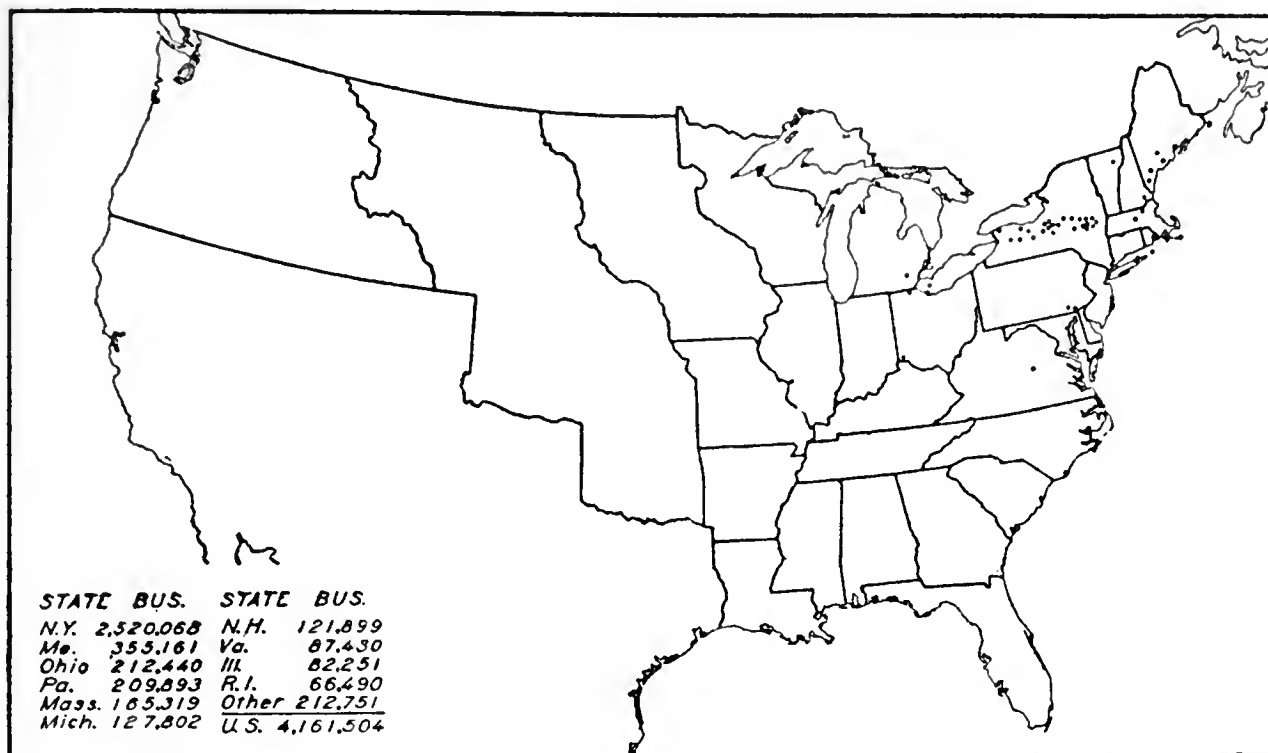


FIG. 82.—Barley, 1839. Each dot represents 100,000 bushels.

Over one-half the total barley crop of the country was grown in New York. In the Mohawk Valley barley was taking the place of wheat.

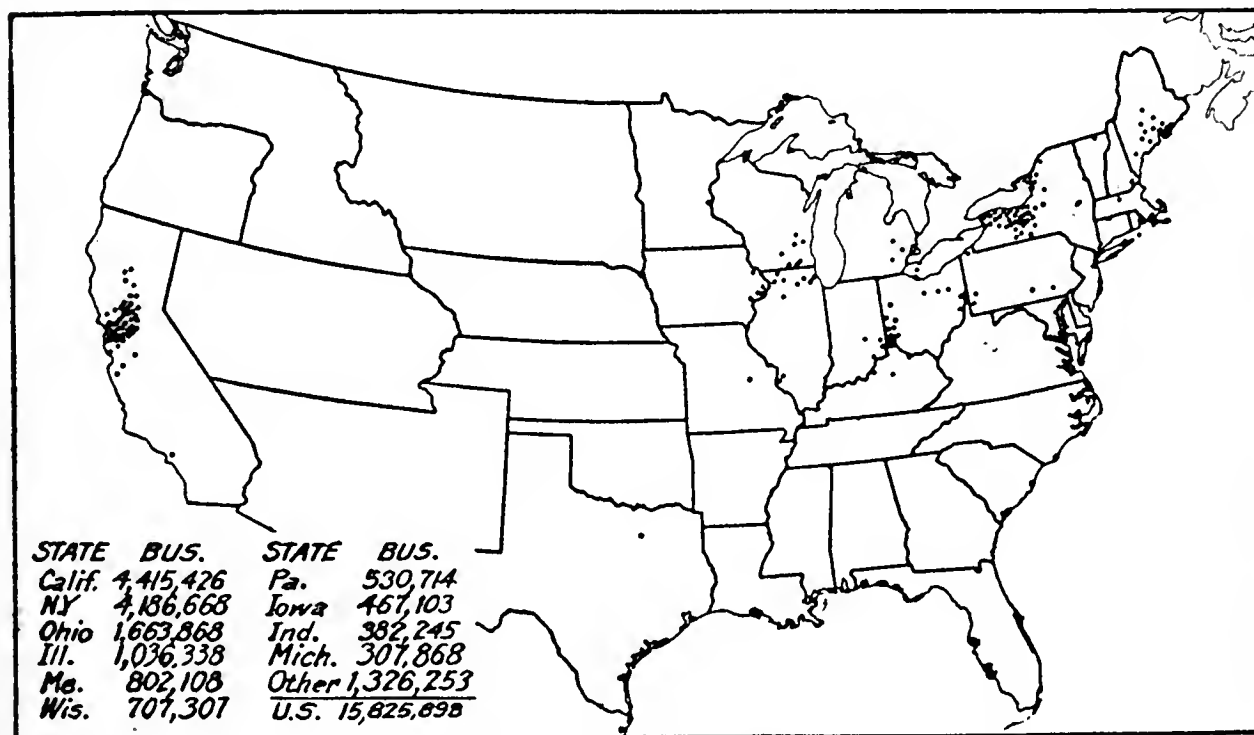


FIG. 83.—Barley, 1859. Each dot represents 100,000 bushels.

During the fifties California developed as a leading barley growing center. It was not a prominent crop in the Mississippi Valley except in the vicinity of Cincinnati, Ohio.

New York barley was often substituted for wheat after the advent of the wheat-midge.²⁸

²⁷ Maine Board of Agric. *5th Annual Report* (1860), *Secretary's Report*, 180.

²⁸ *Country Gentleman* (1859), XIII, 41.

The increased immigration from Europe during the fifties was thought to have stimulated barley production in America. To quote from the census report for 1860:²⁹

“Barley is now used in this country principally for beer-making purposes. With the rapid increase in our foreign population there is yearly an increased demand for barley, and the price has advanced much more than that of any other of our ordinary grain crops. Weight for weight, barley of late years has brought a much higher price than wheat, and, where the soil and climate are well suited to its production, there are few crops more profitable.”

TABLE 43.—*Barley: Production in the United States.*

[Source: U. S. censuses of 1840, 1850 and 1860.]

Geographic division and State.	1840.			1850.			1860.		
	Total (1,000 bu.)	Per 1,000 population (bu.)	Per cent of U. S. total.	Total (1,000 bu.)	Per 1,000 population (bu.)	Per cent of U. S. total.	Total (1,000 bu.)	Per 1,000 population (bu.)	Per cent of U. S. total.
United States	4,162	244	100.0	5,167	223	100.0	15,826	503	100.0
Geographic Division:									
New England	797	357	19.2	414	152	8.0	1,199	382	7.6
Middle Atlantic ...	2,742	606	65.9	3,757	637	72.7	4,742	636	30.0
East North Central..	462	158	11.1	796	176	15.4	4,098	592	25.9
West North Central	11	25	.3	36	41	.7	811	374	5.1
Mountain .....	.....	.....	.....	2	25	.....	18	101	.1
Pacific .....	.....	.....	.....	10	92	.2	4 446	10,013	28.1
New England:									
Maine	355	708	8.6	152	260	2.9	802	1,277	5.1
New Hampshire ...	122	428	2.9	70	221	1.3	121	371	.8
Vermont	55	188	1.3	42	134	.8	79	251	.5
Massachusetts	165	224	4.0	112	113	2.2	135	110	.8
Rhode Island	66	611	1.6	19	128	.4	41	235	.3
Connecticut	34	109	.8	19	52	.4	21	45	.1
Middle Atlantic:									
New York	2,520	1,038	60.6	3,585	1,157	69.4	4,186	1,079	26.5
New Jersey	12	33	.3	6	13	.1	25	37	.2
Pennsylvania	210	122	5.0	166	72	3.2	531	183	3.3
East North Central:									
Ohio	213	140	5.1	354	179	6.9	1,664	711	10.5
Indiana	28	41	.7	46	46	.9	382	283	2.4
Illinois	82	173	2.0	111	130	2.1	1,037	605	6.6
Michigan	128	602	3.1	75	189	1.4	308	411	1.9
Wisconsin	11	357	.2	210	687	4.1	707	912	4.5
West North Central:									
Minnesota .....	.....	.....	.....	1	200	.....	110	638	.7
Iowa	1	17	.....	25	131	.5	467	692	3.0
Missouri	10	26	.3	10	14	.2	228	193	1.4
Nebraska .....	.....	.....	.....	.....	.....	.....	1	38	.....
Kansas .....	.....	.....	.....	.....	.....	.....	5	44	.....
Mountain:									
New Mexico .....	.....	.....	.....	.....	.....	.....	6	65	.....
Utah .....	.....	.....	.....	2	158	.....	10	248	.1
Nevada .....	.....	.....	.....	.....	.....	.....	2	233	.....
Pacific:									
Washington .....	.....	.....	.....	.....	.....	.....	5	399	.....
Oregon .....	.....	.....	.....	.....	.....	.....	26	500	.2
California .....	.....	.....	.....	10	105	.2	4,415	11,620	27.9

²⁹ U. S. Census of 1860, *Agriculture*, p. lxviii.

CHAPTER XXIX.—FLAX AND HEMP.

FLAX GROWN FOR SEED RATHER THAN FOR OIL.

While the census of 1840 gives no satisfactory statistics regarding the production of flax, considerable quantities of the fiber were grown in Kentucky, Virginia, and New York. Indiana and Ohio flax was said to be grown chiefly for seed and for use in making home-made linen.¹ Outside these five States very little flax was grown.

While the growing of flax for seed was said to be increasingly profitable as the demand for linseed oil increased,² the growing of flax fiber was generally regarded as an uncertain and unprofitable business during the forties. Judge Van Wyck, at a meeting of the New York Farmers Club, in 1845, stated the situation as follows:³

“I fear the culture of flax will not repay the farmer if it is conducted as it has hitherto been done for fifty years past. Too much labor, too much cost in getting it prepared and sent to a proper market. The price of seven and a half cents to twelve and a half cents a pound will not remunerate the producer. . . . Grain crops cost us nothing like the labor and expense of flax. . . . It will never do in the northern States, unless some revolution is effected in the culture, dressing, etc. If, by machinery, the difficulties can be overcome, than it may answer.”

Cheap cotton appeared to be the accepted reason for the low price of flax. The census of 1850 showed that the leading States in the production of flax fiber were Kentucky, 1,050 tons; Virginia, 500 tons; and New York, 470 tons. Ohio produced 189,000 bushels of flaxseed, or over one-third of all the flaxseed reported. In the New England States and also in the territory west of Indiana comparatively little flax was grown. (See figs. 84 and 85.) In Ohio, flax was largely cultivated for the seed alone; in the Miami Valley particularly this branch of agriculture was carried on extensively.⁴ Preble County, Ohio, was said to be the greatest flax-growing county in the United States.⁵ Dayton and Cincinnati were large markets for flaxseed. In the former city 150,000 bushels of seed were said to be pressed for oil annually. The oil was shipped to New York and the oil-cake to England.⁶

¹ U. S. Patent Office, *Annual Report* 1844, p. 97.

² *Ibid.*, 100.

³ *Ibid.*, (1845), p. 726.

⁴ *Cultivator*, new series, VII (1850), p. 129.

⁵ U. S. Patent Office, *Annual Report* 1847, p. 164.

⁶ *Cultivator*, new series, VII (1850), p. 129.

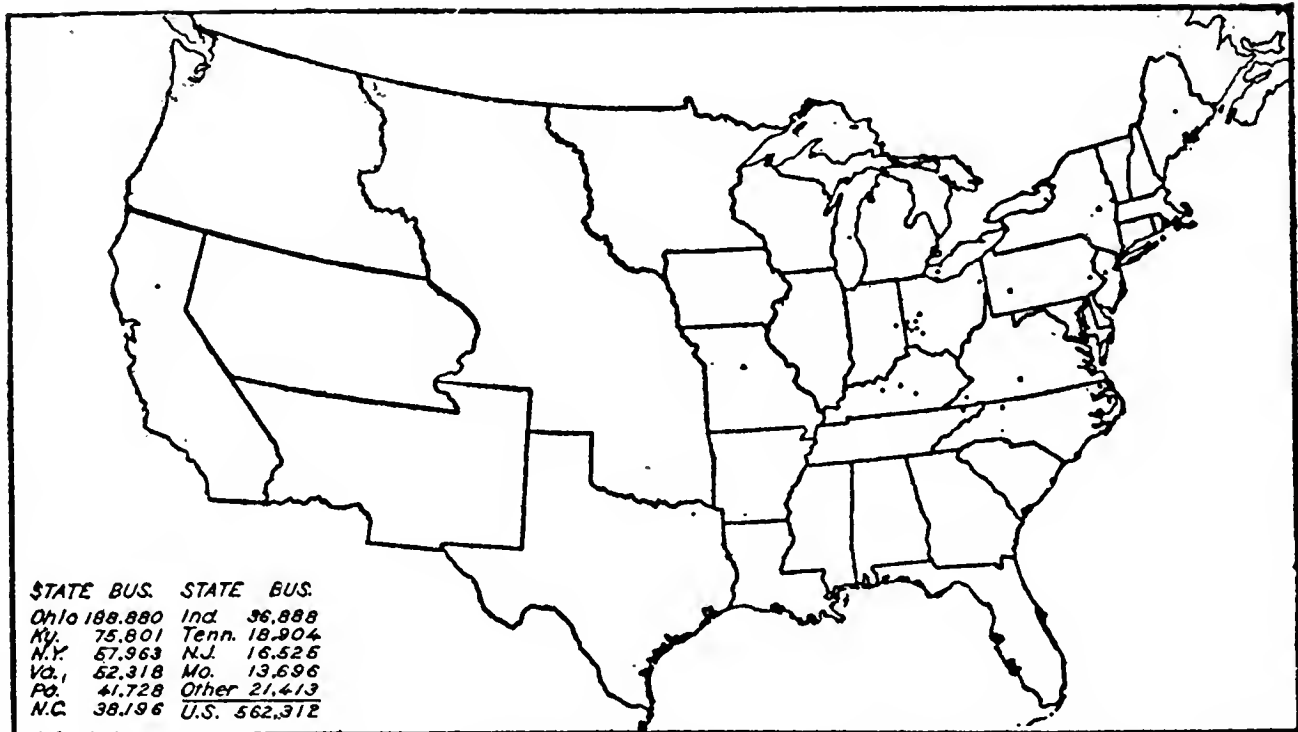


FIG. 84.—Flaxseed, 1849. Each dot represents 25,000 bushels.

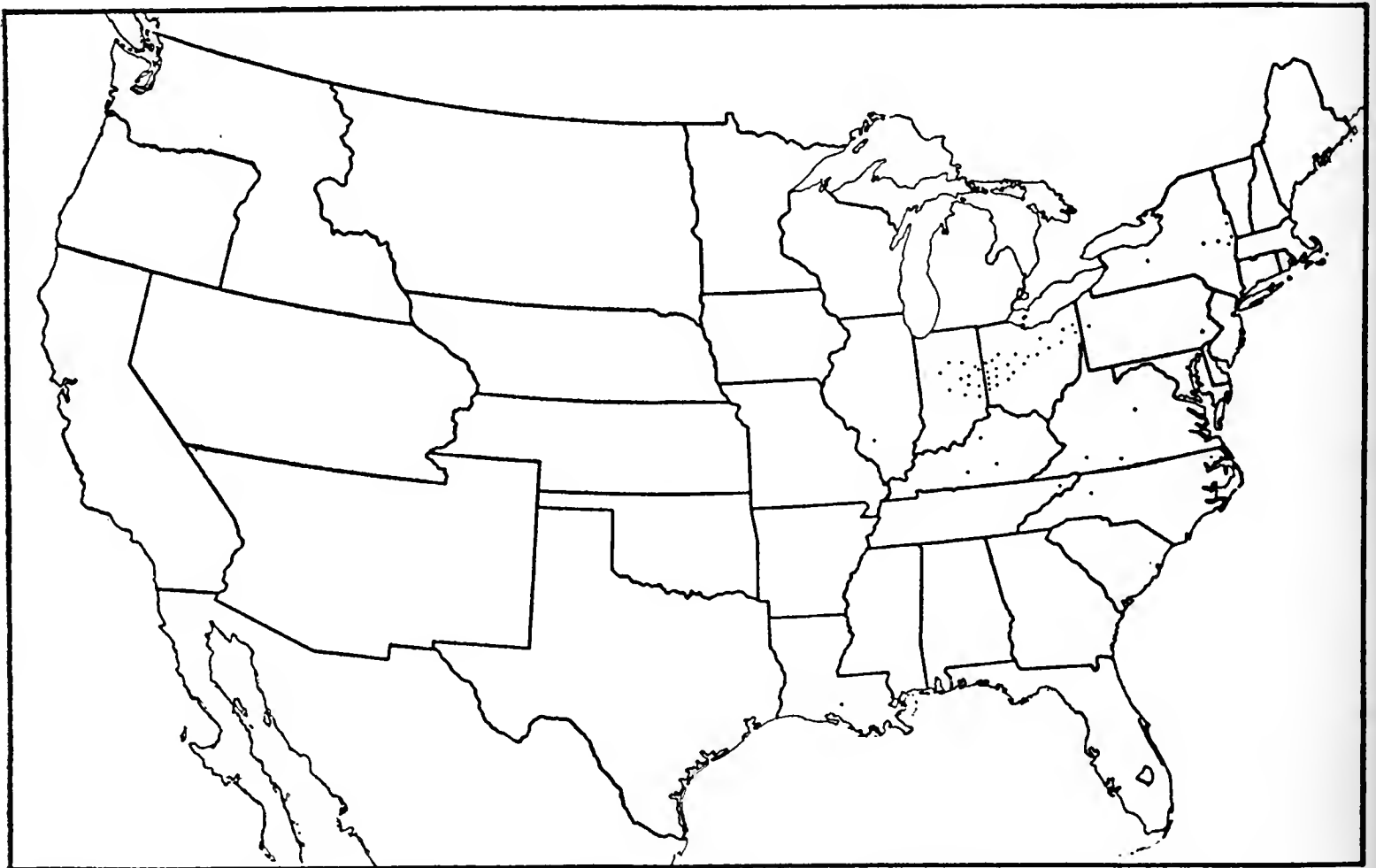


FIG. 85.—Flaxseed, 1859. Each dot represents 10,000 bushels.

By 1860 the Cincinnati region had still further developed. One-half the total flaxseed crop was grown in this vicinity.

TABLE 44.—*Flaxseed: Production in the United States.*

[Source: U. S. censuses of 1850 and 1860.]

Geographic division and State.	1850.		1860.	
	Total (bu.)	Per cent of U. S. total.	Total (bu.)	Per cent of U. S. total.
United States	562,312	100.0	566,867	100.0
Geographic Division:				
New England	2,483	0.4	896	0.2
Middle Atlantic	116,216	20.7	84,430	15.0
East North Central ...	238,265	42.4	375,107	66.2
West North Central ..	15,655	2.8	10,708	1.9
Mountain	5	.....	33	.....
Pacific .....	.....	.....	36	.....
New England:				
Maine	580	.1	419	.1
New Hampshire	189	.....	30	.....
Vermont	939	.2	331	.1
Massachusetts	72	.....	7	.....
Rhode Island .....	.....	.....	.....	.....
Connecticut	703	.1	109	.....
Middle Atlantic:				
New York	57,963	10.3	56,991	10.1
New Jersey	16,525	3.0	3,241	.6
Pennsylvania	41,728	7.4	24,198	4.3
East North Central:				
Ohio	188,880	33.6	242,420	42.8
Indiana	36,888	6.6	119,420	21.1
Illinois	10,787	1.9	8,670	1.5
Michigan	519	.1	341	.1
Wisconsin	1,191	.2	4,256	.7
West North Central:				
Minnesota .....	.....	.....	118	.....
Iowa	1,959	.4	5,921	1.1
Missouri	13,696	2.4	4,656	.8
Nebraska .....	.....	.....	2	.....
Kansas .....	.....	.....	11	.....
Mountain:				
Utah	5	.....	33	.....
Pacific:				
Washington .....	.....	.....	30	.....
Oregon .....	.....	.....	6	.....
California .....	.....	.....	.....	.....

LOCAL MARKETS FOR SEED AND FIBER.

Oil mills and fiber mills were constantly springing up, and offering inducements to farmers to grow flax. The following report is from Miami County, Ohio, in 1846:⁷

“The production of flax for the seed has been very considerable the past season. Persons desirous of purchasing large quantities furnished the seed to farmers during the preceding winter, at the same time, taking written contracts for the delivery of the crop to them at the price of eighty cents per bushel, or the market price. . . . By means of these stimulants large quantities were produced.”

⁷ Ohio State Board of Agriculture, *1st Annual Report* (1846), p. 55.

Another report from St. Joseph County, Indiana, reads as follows: ⁸

"The customary rate of exchange at Oil Mills is a gallon of oil for a bushel of seed. . . . No investment pays better than a few acres in flaxseed bartered for oil and spread upon our buildings, farming utensils and gates."

TABLE 45.—*Flax fiber: Production in the United States.*

[Source: U. S. Censuses of 1850 and 1860.]

Geographic division and State.	1850.		1860.	
	Total (1,000 lbs.)	Per cent of U. S. total.	Total (1,000 lbs.)	Per cent of U. S. total.
United States	7 710	100.0	4,720	100.0
Geographic Division:				
New England	65	.8	13	.3
Middle Atlantic	1,653	21.5	1,879	39.8
East North Central...	1,267	16.4	1,054	22.3
West North Central..	590	7.6	143	3.0
Mountain	1	.....	a 4	.1
Pacific	1	.....		.....
New England:				
Maine	17	.2	3	.1
New Hampshire	8	.1	2	.....
Vermont	21	.3	a 7	.2
Massachusetts	1	.....		.....
Rhode Island	a	.....		.....
Connecticut	18	.2	1	.....
Middle Atlantic:				
New York	940	12.2	1,518	32.2
New Jersey	183	2.4	49	1.0
Pennsylvania	530	6.9	312	6.6
East North Central:				
Ohio	447	5.8	883	18.7
Indiana	585	7.6	97	2.0
Illinois	160	2.0	48	1.0
Michigan	7	.1	4	.1
Wisconsin	68	.9	22	.5
West North Central				
Minnesota .....		.....	2	.1
Iowa	63	.8	30	.6
Missouri	527	6.8	110	2.3
Kansas .....		.....	1	.....
Mountain:				
Utah	1	.....	4	.1
Pacific:				
Oregon	1	.....	a	.....

^a Less than 500 pounds

More or less flax was still grown in the family "flax patch." In Gallia County, Ohio, in 1849, it was said: ⁹

"The operations in flax culture are very limited, many of the old matrons (notwithstanding the cheapness of cotton fabric), annually have a 'flax patch' from which they are enabled to make sewing thread, table linen and towels. The seed from which, above a stock of seed for the next season, is taken to market, and not more than 950 barrels has found its way to all points of trade in the county, since June last."

⁸ *Prairie Farmer*, XII (1852), p. 199.

⁹ Ohio State Board of Agriculture, *4th Annual Report* (1849), p. 97.

In regions of the West where flax was grown for seed the straw was commonly not utilized, a fact which was greatly lamented by many of the older flax growers.¹⁰ When threshed by machine, the straw was left in a "rough and tangled" condition; yet mills were established, and many attempts made to utilize the straw in the manufacture of paper.¹¹ At Beloit, Wisconsin, in 1854, flax-straw was reported to be worth from \$4 to \$7 a ton at the paper mill;¹² in Winnebago County, Illinois, \$5 a ton.¹³ In Seneca County, New York, in 1853, flax straw was worth \$5 a ton for manufacturing into lint. Flax grown for fiber was pulled by hand or cut with the cradle. When grown for seed it was cut with the cradle and sometimes threshed with a machine, but a more common way was to tramp it out with horses.¹⁴ Flax fiber was largely dew-retted instead of water-retted,¹⁵ as in the old-fashioned system.

DECREASE IN FIBER AND INCREASE IN SEED, 1850 TO 1860.

The census of 1860 showed that the production of flax fiber had decreased from 7,700,000 pounds in 1849 to 4,700,000 pounds in 1859, a falling off of nearly one-half during the decade. Meanwhile, the production of flax for seed had increased but slightly (less than 4,500 pounds). (See figs. 84 and 85.) New York, which reported a considerable increase since 1850, now led in the production of flax fiber. Ohio, Kentucky, Virginia, Pennsylvania, and North Carolina followed in the order named. New York and Ohio were the only States showing a considerable increase in flax production. In the production of seed, Ohio and Indiana led the States, with New York, Virginia, and Kentucky next in order. These five States produced 84 per cent of the total crop of flaxseed in 1859. The production of flaxseed and fiber in the family flax patch was decreasing and flax had not yet become a distinctive pioneer crop in the West.

HEMP PRODUCTION IN 1840.

The census of 1840, which reported hemp and flax together, showed that Virginia led all the States in the production of these crops, but the figures given were rather generally criticized as inaccurate. Charles Cist, writing in 1845, asserted: "Kentucky and Missouri produce more hemp than all the rest of the United States, and ten times as much as either Ohio, Indiana or Virginia." A Kentucky correspondent wrote:

"There are probably not 100 tons of hemp produced in Virginia. It is grown to a limited extent in the counties of Virginia bordering on the Ohio River. The product in Kentucky is about 15,000 tons; of Missouri 6,000 to 8,000 tons; Indiana and Illinois 500 tons; Ohio 500 to 1,000 tons."

Hon. Adam Beatty, in 1844, estimated the amount of hemp grown in Kentucky for the past 2 years as about 12,000 tons per annum.¹⁶ Kentucky and

¹⁰ *Prairie Farmer*, XII (1852), p. 198.

¹¹ *Ibid.*, XIV (1854), p. 283; *Cultivator*, new series, VII (1850), p. 308.

¹² U. S. Patent Office, *Annual Report 1854, Agriculture*, p. 186.

¹³ *Prairie Farmer*, XIV (1854), p. 283.

¹⁴ *Ibid.*, XII (1852), p. 199.

¹⁵ U. S. Patent Office, *Annual Report 1845*, pp. 726, 732.

¹⁶ *Ibid.*, 1844, p. 96.

Missouri were generally considered as the leading States in hemp production in 1840.

In Missouri, hemp was grown mainly in Lafayette County and in other counties bordering on the Missouri River. In Kentucky, hemp production was concentrated in the heart of the limestone district. Mason, Bourbon, Montgomery, Clarke, Fayette, Woodford, and Scott Counties in 1844 were regarded as best adapted for hemp, and in them the crop was extensively grown.¹⁷

METHODS OF CULTIVATION AND HARVESTING.

In Kentucky, the growing of successive crops of hemp for 9 or 10 years on the same land was frequent. "Good hemp land, in Mason County," it was said,¹⁸ "will upon an average, in ordinary seasons, yield a ton (2,240 lbs.) for every three acres." The methods of sowing and culture were similar to those employed with corn. Adam Beatty reported¹⁹ in 1844:

"Pulling is still practiced by some. With hemp hooks, tolerable hands will cut, on an average, half an acre each; with cradling scythes, an acre may be cut with ease, by good hands, in hemp not exceeding six or seven feet high. . . . First rate hands on the common break will clean two hundred pounds per day, upon an average. Two of my best hands, during the past season, for every day they broke, favorable and unfavorable, averaged 186 pounds. Two others, who are young men, and not full hands, average 144 pounds. The ordinary task for hands is 100 pounds. Many efforts have been made to clean hemp by machinery, but hitherto without success. At least no method has yet been discovered, that answers as well as the common hand break." ²⁰

Nearly all the hemp grown in Kentucky and Missouri was dew-retted and manufactured into rope and bagging for use in the cotton trade of the south. A considerable quantity, however, was shipped to eastern cities for use in making rope for ship-rigging and into cable.²¹ Adam Beatty reported that in 1844 there was received at Maysville, Kentucky, a leading market, 2,669 tons of dew-retted hemp and 81 tons of water-retted hemp.²²

ATTEMPTS TO PRODUCE WATER-RETTEED HEMP.

In consequence of the increasing production and the limited demand of the cotton trade for bagging and rope, a considerable surplus of dew-retted hemp accumulated in the hands of the hemp growers in the early forties.²³ The Kentucky hemp-grower was anxious to improve the quality of his hemp by some cheap method, thus producing a good grade of clean hemp which could be sold on the market for naval and merchant service in competition with that which was imported.²⁴

"The great difficulty [reported one] is a process of water-retting and a break,—such as would enable the farmer properly to prepare for the market much of the hemp, which is now converted into bagging or wasted." ²⁵

¹⁷ Beatty, *Essays on Practical Agriculture*, 112.

¹⁸ *Ibid.*, 113.

¹⁹ *Ibid.*, 107, 108.

²⁰ *Ibid.*, 112.

²¹ U. S. Patent Office, *Annual Report* 1845, p. 701.

²² *Ibid.*, 1844, p. 95.

²³ *Ibid.*, 96.

²⁴ *Ibid.*, 1844, p. 276. The principal source of foreign supply was Russia.

²⁵ *Ibid.*, 98.

The Federal Government in 1841 authorized a bounty, which allowed for the payment of not more than \$280 per ton for American water-retted hemp, provided it was suitable for naval cordage.²⁶ Many of the planters prepared large pools and water-retted the hemp they produced. But the work was so hard on negroes that the practice was abandoned. Many negroes died of pneumonia contracted from working in the hemp-pools in the winter, and mortality became so great among the hemp hands that the increase in value of the hemp did not equal the loss in negroes. Besides, the difficulty of finding a market for the water-retted hemp at a higher price than the dew-retted hemp, discouraged many from further attempts at water-retting.²⁷ Shipments of dew-retted hemp were made to Europe, but apparently without much success. One shipment sent to Europe was reported to have returned but \$40 per ton.²⁸

In 1850 the production of hemp was generally reported to be on the increase. The census of that year credited Kentucky with 18,000 tons and Missouri with 16,000 tons. A total of 1,057 tons was produced in all other States. From Clarke County, Kentucky, it was reported in 1851 that cutting had almost entirely superseded the old method of pulling.²⁹ In 1859 the Kentucky production was reported to have more than doubled, and was now estimated at 39,000 tons.³⁰ The crop in Missouri showed but little increase, amounting to only 19,000 tons. Indiana produced 4,000 tons, North Carolina 3,000, and Tennessee 2,250 tons. 22 other states produced a total of 7,200 tons. North of the Ohio River many attempts were being made to grow hemp but with little success. Many counties in central Illinois experienced a hemp fever of short duration in 1843.³¹

²⁶ *Ibid.*, 275.

²⁷ Beatty, *Essays in Practical Agriculture*, III.

²⁸ U. S. Patent Office, *Annual Report* 1845, p. 700.

²⁹ *Ibid.*, 1851, *Agriculture*, 360.

³⁰ U. S. Census of 1860, *Agriculture*, 65.

³¹ *Prairie Farmer*, VIII, 1847, p. 305; U. S. Patent Office, *Annual Report* 1844, p. 97; *ibid.*, 1843, p. 69.

CHAPTER XXX.—HAY.

The hay-producing area of the United States in 1840 was mainly in the northeastern States. In New England and in New York, Pennsylvania, and New Jersey, with the exception of the wheat region of western New York and western Pennsylvania, hay was regarded as the staple crop. In Ohio, hay was a substantial crop, but farther west the sparse population and vast prairies and marshes rendered the cultivation of English grasses and clover an object of little importance. There but little hay was harvested, and that largely from native grasses. (See fig. 86.)

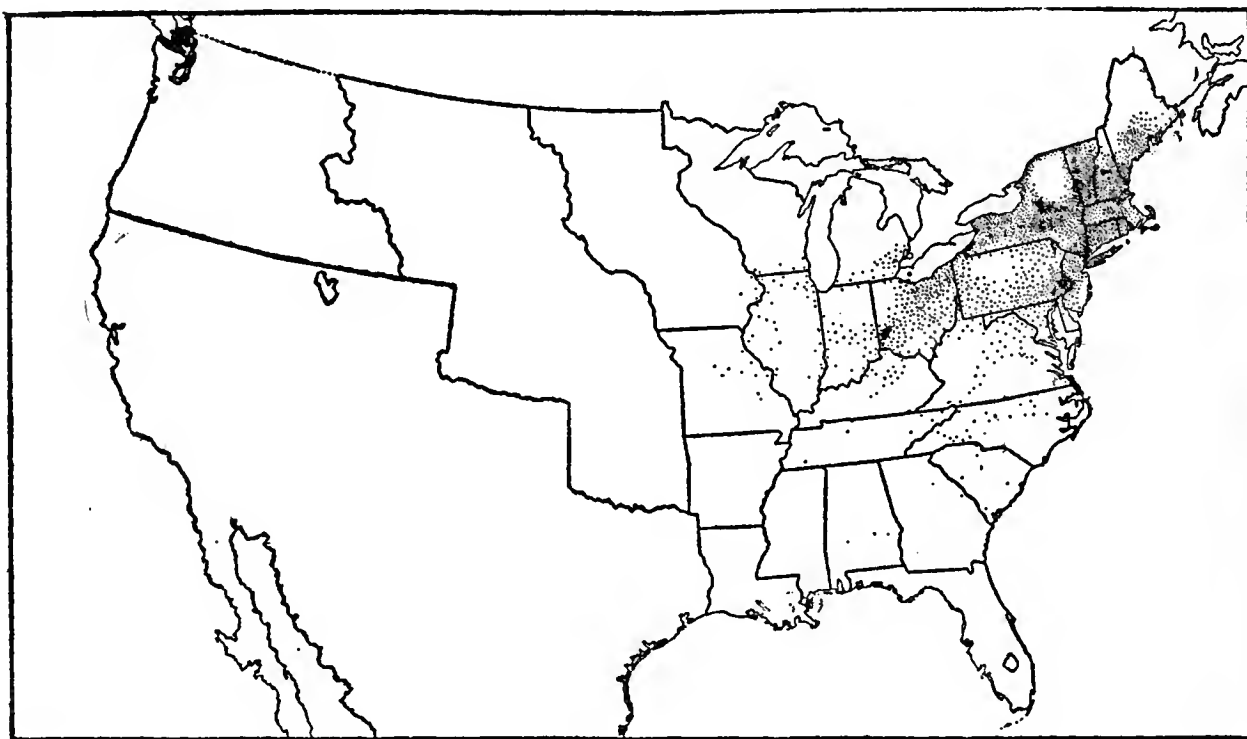


FIG. 86.—Hay, 1839. Each dot represent 5,000 tons.

In the northeastern states the feeding of livestock through long winters required large amounts of hay. In the Mississippi Valley the unoccupied prairie furnished abundant pasture during the summer and some feeding the winter. But little attention was given to seeding the cultivated grasses. The short winters and abundant corn crop of Kentucky made hay less necessary there.

IMPORTANCE OF THE HAY CROP IN THE EAST.

The census reports show tons of hay harvested, but no statistics are given for pasture lands, hence the figures do not indicate the relative importance of the grass-crop in the different regions. In New England and New York, where the long winters and the mixed system of farming made a large supply of fodder necessary, a considerable portion of the grass was harvested as hay. In the bluegrass region of Kentucky and in much of the West, on the other hand, where cattle-raising was a leading industry, less hay was harvested than in the East, since the livestock was pastured during much of the year.

The culture of hay in the older settled region of the East had undergone rapid and important changes since the beginning of the century. Before the introduction of the practice of sowing clover and timothy, an event which in

TABLE 46.—*Hay and forage: Production in the United States.*

[Source: U. S. censuses of 1840, 1850 and 1860.]

Geographic division and State.	1840.		1850.		1860.	
	Total (1000 tons).	Per cent of U. S. total.	Total (1000 tons).	Per cent of U. S. total.	Total (1000 tons).	Per cent of U. S. total.
United States	10,248	100.0	13,839	100.0	19,084	100.0
Geographic Division:						
New England	3,084	30.1	3,464	25.0	3,869	20.3
Middle Atlantic	4,774	46.6	6,008	43.4	6,319	33.1
East North Central....	1,527	14.9	3,129	22.6	5,585	29.3
West North Central...	67	.7	208	1.5	1,475	7.7
Mountain .....	.....	.....	5	.....	23	.1
Pacific .....	.....	.....	2	.....	338	1.8
New England:						
Maine	691	6.7	756	5.5	976	5.1
New Hampshire	496	4.8	599	4.3	643	3.4
Vermont	837	8.2	866	6.3	940	4.9
Massachusetts	569	5.6	652	4.7	665	3.5
Rhode Island	64	.6	75	.5	83	.5
Connecticut	427	4.2	516	3.7	562	2.9
Middle Atlantic:						
New York	3,127	30.5	3,729	26.9	3,565	18.7
New Jersey	335	3.3	436	3.2	509	2.6
Pennsylvania	1,312	12.8	1,843	13.3	2,245	11.8
East North Central:						
Ohio	1,022	10.0	1,443	10.4	1,565	8.2
Indiana	178	1.7	403	2.9	622	3.3
Illinois	165	1.6	602	4.4	1,775	9.3
Michigan	131	1.3	405	2.9	768	4.0
Wisconsin	31	.3	276	2.0	855	4.5
West North Central:						
Minnesota .....	.....	.....	2	.....	180	.9
Iowa	18	.2	89	.6	813	4.3
Missouri	49	.5	117	.9	401	2.1
Dakota Territory .....	.....	.....	.....	.....	1	.....
Nebraska .....	.....	.....	.....	.....	24	.1
Kansas .....	.....	.....	.....	.....	56	.3
Mountain:						
New Mexico .....	.....	.....	.....	.....	1	.....
Utah .....	.....	.....	5	.....	20	.1
Nevada .....	.....	.....	.....	.....	2	.....
Pacific:						
Washington .....	.....	.....	.....	.....	4	.....
Oregon .....	.....	.....	^a	.....	28	.2
California .....	.....	.....	2	.....	306	1.6

^a Less than 500 tons.

1840 was still within the recollection of the older farmers, the supply of hay was limited to that procured from natural meadows, watered by the overflow of streams or by irrigation.¹ The increased use of clover, gypsum, lime, and manure, and improved methods of tillage, had brought about marked changes

¹ See above, p. 103.

by 1840. The uplands were now commonly considered as productive in grass as the lowlands. Clover and gypsum were regarded as the basis of the new system of agriculture.

New York, with over 3,000,000 tons, led the States in the production of hay in 1839. With the decrease of wheat production and the development of dairying and grazing, hay had become the chief crop in the central part of the State—in Oneida, Madison, Chenango, Herkimer, Otsego, and Montgomery counties. In the wheat-growing region of the western part of the State it had been found that the growing of clover and the grazing of cattle and sheep on depleted wheat lands would greatly increase their yields. For the surplus hay produced in the region of the Hudson River and Long Island, New York City furnished a large market.

IN NEW YORK—HAY ON UPLANDS AND MEADOWS.

In central and eastern New York, as in New England, it was the aim of the farmer to produce as much grass as possible. The usual cropping system on the uplands included one cultivated crop and one grain crop. The grass and clover seed was sown by hand among the grain and the land was then allowed to lie in grass for hay or pasture from 2 to 6 years.

Farm manure was commonly applied to the land at the time of seeding. It was the universal custom to sow from 1 to 2 bushels of gypsum per acre, and often the land was given a top-dressing of gypsum each succeeding spring. It was claimed, however, that gypsum no longer had its former beneficial effect, especially on old lands.² On the wheat lands of western New York the clover crop was considered essential. "Clover, plaster and wheat" were said to be regarded as "the three indispensables for any well-regulated wheat farm." It was usual, after from one to three crops of wheat, to sow clover among the wheat, and then to leave the ground in meadow or pasture for 2 or 3 years, when it was again turned under for wheat.³

Meadows and pasture lands were not suffered to lie as long as formerly without plowing.⁴ The "old meadow system," of having lowlands in permanent meadow which was seldom top-dressed and never ploughed, was being gradually abandoned. Meadows were now more frequently top-dressed, or ploughed up and reseeded. There were several ways of doing this. One way was to sow the grass seed over the deteriorated turf and then to harrow it in by repeatedly passing over it a heavy, sharp-toothed harrow. Another method was to turn over the defective meadow or pasture in the fall, to give it a dressing of manure in the spring, and then to seed to spring wheat, oats, barley, or corn. Grass-seed was sown in the grain in the spring or in the corn in the fall.⁵ In the wheat region of the western part of New York, the system of meadows on the low-lying lands and creek-flats commonly prevailed, but these were more frequently top-dressed than formerly.

² U. S. Patent Office, *Annual Report 1850, Agriculture*, 469.

³ N. Y. State Agric. Soc. *Transactions*, II (1842), p. 53.

⁴ *Ibid.*, 158.

⁵ *Ibid.*, 115.

IN NEW ENGLAND.

In New England, the cropping system was usually planned to produce the maximum amount of hay. A common rotation was corn, potatoes, oats; the land was then seeded and remained in grass from 3 to 6 years, or, in general, as long as it continued to yield a ton of hay to an acre. Compost, manure, and gypsum were commonly applied at the time of sowing. General livestock farming, lumbering in the North, and the presence of New York City, Boston, and other towns, both inland and seaboard, furnished ready markets for the farmer's surplus crop of hay. Some was shipped to the Southern States. In the vicinity of the ocean, marsh hay was used in large quantities for feeding cattle.⁶

IN EASTERN PENNSYLVANIA.

In eastern Pennsylvania, hay was largely produced in the established rotation of corn, oats, wheat, and grass, with the grass-land cut or grazed for 2 to 4 years. It was reported from Dauphin County that, before lime came into use, a crop of clover was generally ploughed under before seeding to wheat, but that since then the crop was generally taken off before the sod was turned.⁷ Philadelphia and the National Road furnished markets for the surplus crop.

IN KENTUCKY.

In Kentucky, where the bluegrass pastures furnished available feed for the entire year, but little hay was harvested. In parts of the State, where the grazing of cattle was extensively practiced, farmers were in the habit of sowing down in bluegrass the land which had been most exhausted by repeated cultivation of corn and wheat. Others followed the practice of clearing up and thinning out the woodland, and seeding down to bluegrass for pastures.⁸ Clover was extensively grown for a pasture crop, but the use of hay was so limited that little attention was paid to meadows. Corn-fodder and oats were generally substituted for hay.

LACK OF SUCCESS WITH CULTIVATED GRASSES ON THE PRAIRIES.

West of Ohio, the small amounts of hay which were harvested consisted chiefly of wild prairie and marsh grass. The natural prairies and meadows of Michigan, Illinois, and Iowa, and the prairies interspersed with marsh land in Wisconsin and Indiana, produced an abundant supply of hay, indeed, far beyond the wants of the country at the time. To the early farmers who settled on the higher land the prairies and marshes were of inestimable value, providing them with milk, butter, and cheese, as well as with forage for fattening swine and cattle, until farms could be properly opened.

As the result of many failures, the opinion was current that cultivated grasses would not thrive on prairie lands. But as the prairies afforded suffi-

⁶ U. S. Patent Office, *Annual Report* 1849, *Agriculture*, 291.

⁷ *Ibid.*, 1851, p. 254.

⁸ Beatty, *Essays in Practical Agriculture*, 64, 66, 67.

cient wild grass for hay, the need of tame hay was not urgent and but few persistent attempts were made to grow it, nor was much attention given to the curing of hay. A correspondent⁹ wrote:

“It is quite common to begin Monday and to continue to mow till Saturday, when with hand rakes and horse rakes, all turn in, take it up and stack it; and this is done too, without much regard to the state of the weather at the time it is raked, or to what it may have been after it was cut. The appearance of the animals which are fed on hay thus managed, is evidence enough of its worthlessness.”

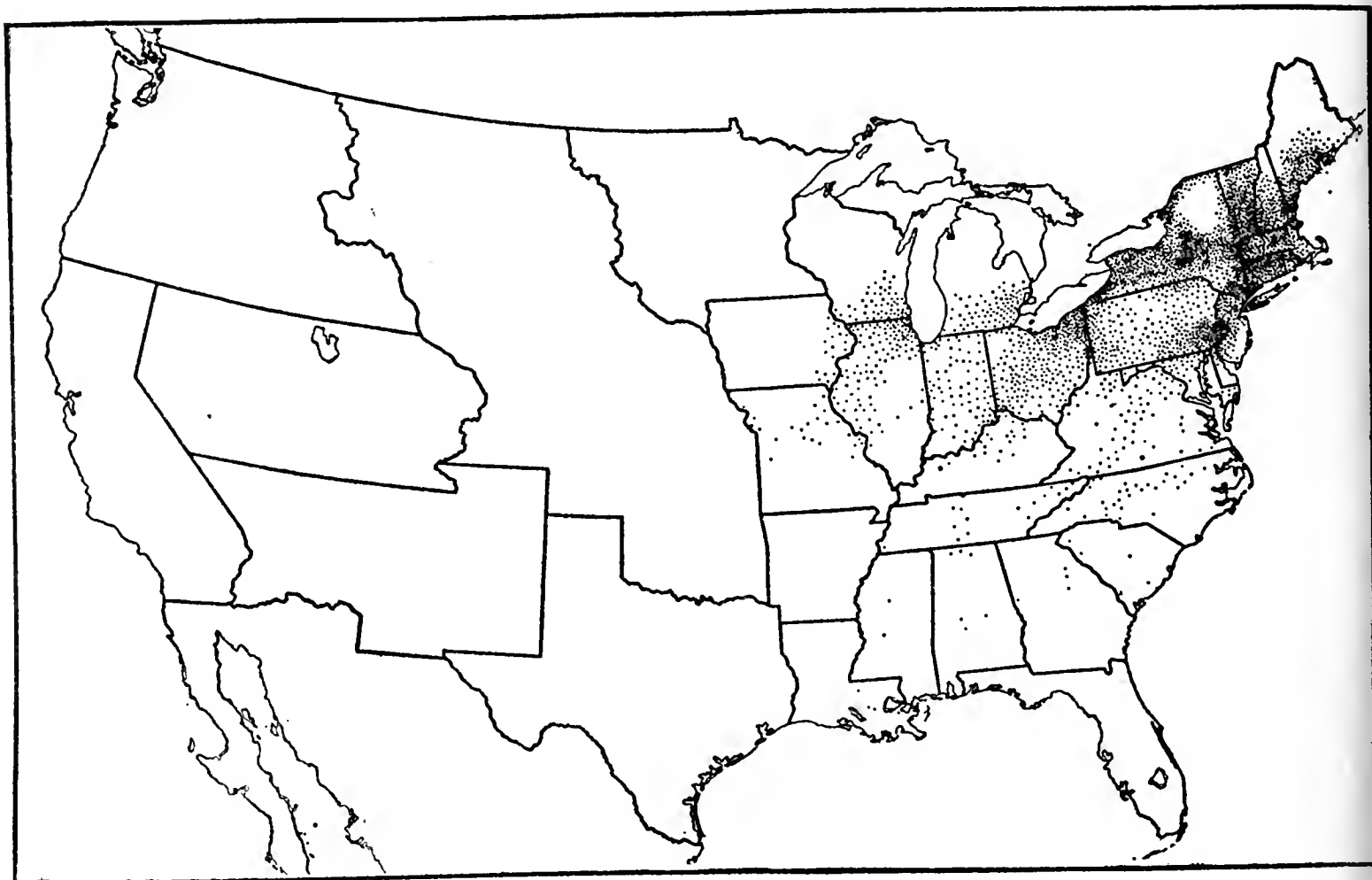


FIG. 87.—Hay, 1849. Each dot represents 5,000 tons.

With the settlement of the Mississippi Valley the harvesting of hay increased.

HAY MORE OF A CASH CROP IN THE EAST AFTER 1850.

The census of 1850 showed that there had been a general increase in the production of hay, and that although its cultivation was still confined principally to the eastern States, the production in the West was increasing. The Western Reserve in Ohio, Michigan, southern Wisconsin, and northern Illinois were the localities of greatest increase. (See fig. 87.) New York, Ohio, Pennsylvania, and New Jersey led in the production of hay and clover seed.

In New York the counties on the Hudson reported a growing demand for hay from the New York market.¹⁰ In Philadelphia County it was said that dairying was not so extensively carried on as formerly, since most farmers found it more profitable to sell hay.¹¹ In the vicinity of Rochester hay was said to be a very profitable crop.¹² Nearness to market or water transportation

⁹ *Cultivator*, new series, I (1844), p. 173.

¹⁰ U. S. Patent Office, *Annual Report 1849, Agriculture*, 101, 106; 1853, p. 219.

¹¹ *Ibid.*, 1851, p. 239.

¹² *Ibid.*, 1853, p. 219.

was necessary for profitable hay sale. Railroads were few, and their freight rates were high. As late as 1855 the cost of transporting hay from Allegheny County in western New York to New York City was said to be \$12 a ton.¹³

INCREASED ATTENTION TO CULTIVATED GRASSES IN THE WEST.

Farther West, in Ohio, the grass crop was becoming more important, as the profits of grazing for several years had been greater than those derived from the growing of grain. In the grain-growing regions of Indiana clover was becoming more common. From Wayne County, in 1851, it was reported:¹⁴ "Clover is beginning to be much cultivated for the purpose of resting and enriching the soil. It is principally pastured by hogs and cattle; seldom being cut for hay." Many allowed the last crop to grow and harvested the seed.

On the prairies of northern Illinois, Wisconsin, and eastern Iowa, more attention was now given to the cultivation of clover and grasses. The increased interest in general farming and livestock, together with the inclosing of the open prairies during the poor wheat crops¹⁵ succeeding 1847, resulted in increased attention to the cultivation of the improved grasses.¹⁶ The native prairie grasses were not adapted to livestock farming and pasturage, since they appeared late in the spring and failed early in the fall.¹⁷

HAY PROVES A SUCCESSFUL CROP ON PRAIRIE FARMS.

The increased care given to the cultivation of grasses because of the greater demand for hay was disproving the theory that grasses could not be grown on the open prairies and oak openings. Regarding the origin of this belief in Illinois, a correspondent wrote as follows:¹⁸

"How has Illinois obtained the name of not being a grass country? Perhaps in this wise: The emigrant leaves New York, New Jersey, Pennsylvania, Virginia, Kentucky, or Ohio, and reaches Illinois, and expects to make a stock and grass farm in three or four years. The spring after his arrival he breaks up one hundred acres of prairie, and raises two crops, it may be by a very imperfect system of tillage. The second year he sows a portion of the one hundred acres in Blue Grass, timothy or clover, forgetting or not knowing that it is all important that land intended for permanent pasture should be cultivated a sufficient length of time in corn and other grain to effectually destroy the wild properties of the soil, the wild grass and weeds."

It was the general opinion among those who succeeded in the cultivation of grass that the failure of others was owing largely to insufficient preparation of the soil.

MARKETING OF WESTERN HAY.

Hay was baled and shipped from a few localities by way of the Mississippi River and its branches to the southern market. In the lake region, small amounts of hay were commonly sold to vessels bound for the lower lakes or

¹³ *Ibid.*, 1855, p. 253.

¹⁴ *Ibid.*, 1851, p. 430.

¹⁵ Wis. State Agric. Soc. *Transactions* 1853, p. 216.

¹⁶ U. S. Patent Office, *Annual Report* 1853, p. 213.

¹⁷ Wis. State Agric. Soc. *Transactions* 1851, p. 227.

¹⁸ Ill. State Agric. Soc. *Transactions* (1853-54), p. 431.

for the lumber regions along Lake Michigan.¹⁹ W. G. Edmundson in 1852 described a prairie hay-farm of 600 acres in the upper part of Lee County, Iowa, about 15 miles from the river, which shipped in that year 700 tons of timothy hay packed in bales of 250 or 300 pounds.

MORE INTENSIVE METHODS IN THE EAST.

The census of 1860 reported a relatively small general increase in the production of hay in the States east of Ohio. The New York production was slightly less than in 1849. The territory west of Ohio, southern Michigan, northern Illinois, southern Wisconsin, eastern Iowa, southeastern Minnesota, and northwestern Missouri was the region of greatest increase. (See fig. 88.) In the East, greater care was being given to the preparation and manuring of

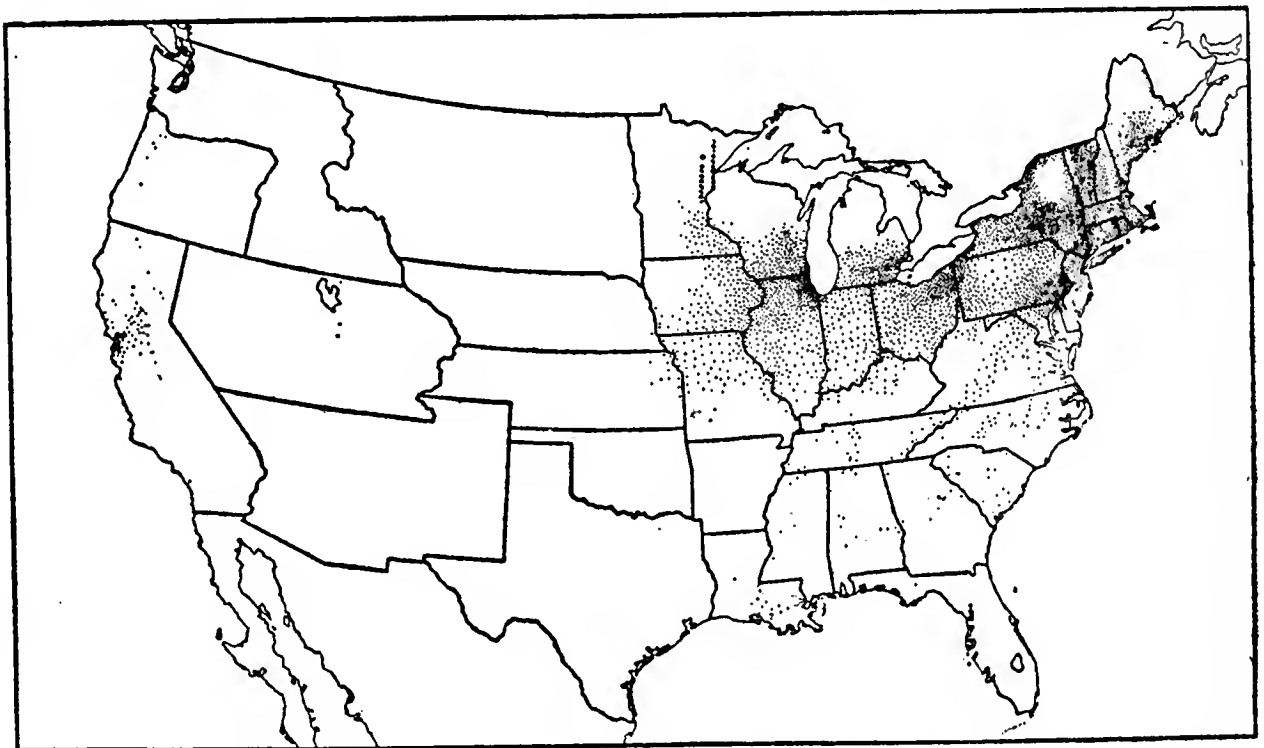


FIG. 88.—Hay, 1859. Each dot represents 5,000 tons.

With the disappearance of much of the free public land and the subduing of the soil in the Great Lakes region the culture and harvesting of hay increased.

the soil. In New England, farmers were ditching and draining low-lands suitable for hay production, and clearing the fields of rocks. "As mowing machines are coming into use," reports one correspondent, "the stone digger must prepare the way for them." In the West, the growth of the cattle industry, together with the inclosing of the prairies, was leading to an increased acreage of cultivated grasses.

Throughout the United States in 1840 hay was cut with the scythe. Mowing-machines had been invented, but their work as yet was unsatisfactory, and only a few were in use.²⁰ By 1860, in some sections, the greater part of the hay was cut by machines, in others the appearance of a mower was yet a matter of comment. For raking the hay the "common horse-rake," or the "revolving wooden horse-rake," was in general use, except in the rougher sections of the East, where the hay was still raked by hand.

¹⁹ *Prairie Farmer*, XIV (1854), p. 338.

²⁰ *Ibid.*, IX (1849), p. 320; VIII (1848), p. 181.

CHAPTER XXXI.—POTATOES AND ROOTS.

In 1839 the New England States, New York, Pennsylvania, and New Jersey were the leading potato-growing states. They produced over 70 per cent of the total potato crop of the country. New York alone raised 30,000,000 bushels, Ohio 5,800,000 bushels, and Michigan 2,100,000 bushels. Farther West potatoes were generally grown only for home and local consumption, except by a few farmers living in the vicinity of the rivers and lakes, who sold potatoes for the southern market or to supply the lumber trade of the lake region. (See fig. 89.)

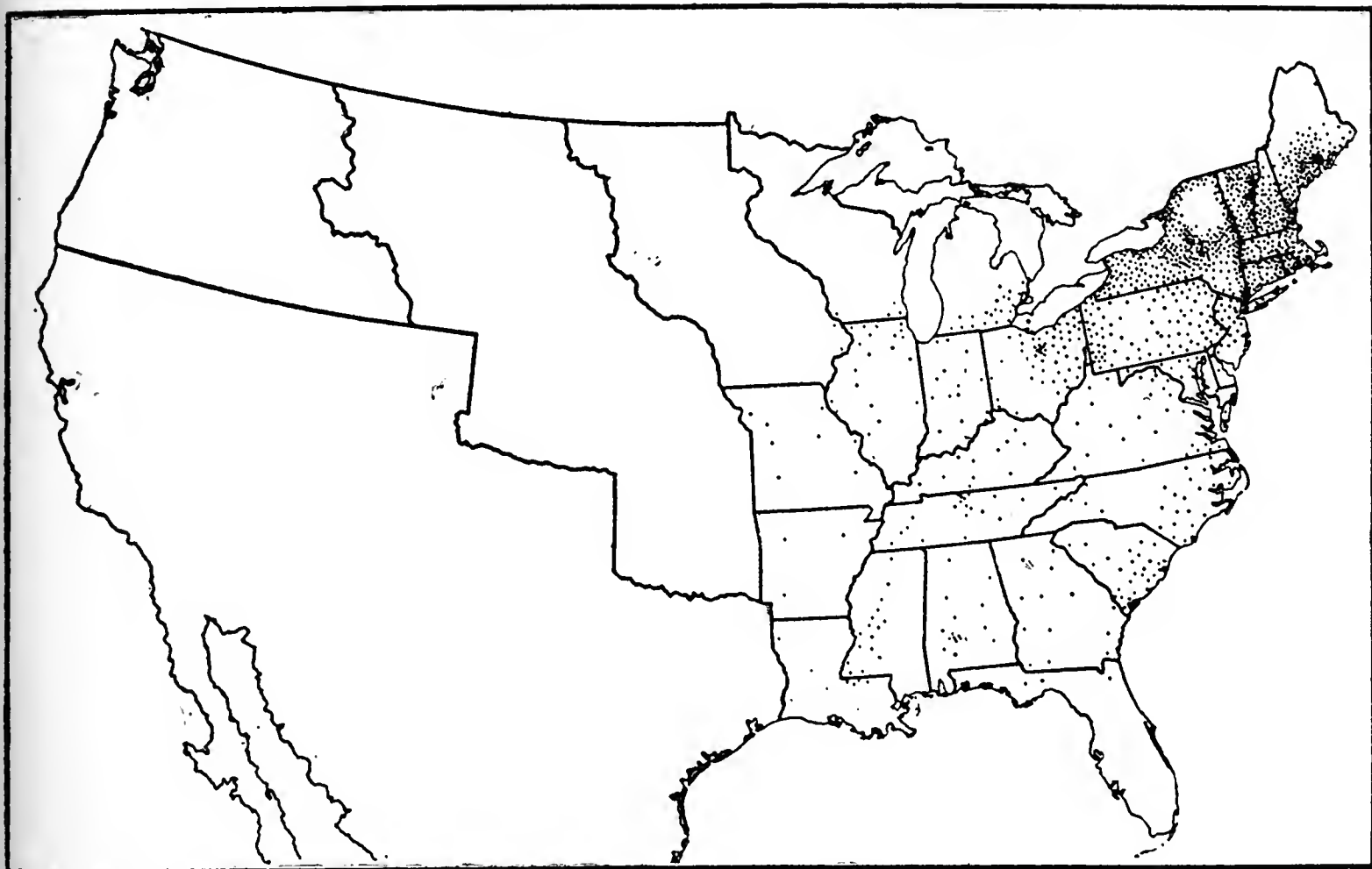


FIG. 89.—Potatoes, 1839. Each dot represents 100,000 bushels.

Potatoes were a leading farm crop throughout the northeastern states in 1840. They were extensively used for stock feeding.

In New England and New York the potato was regarded as one of the most successful crops, and was cultivated extensively in southwestern Maine, Vermont, and central New York. The State of Maine was already celebrated for its fine potatoes;¹ those grown in the neighborhood of Eastport, Maine, were regarded as of superior quality and were sold as "Eastport potatoes."² More than 12,000 bushels of potatoes were brought into Hallowell, Maine, in

¹ U. S. Patent Office, *Annual Report* 1847, p. 134.

² *Ibid.*, 1845, p. 200.

one week in 1843 and sold for shipment.³ Long Island and Oneida County, New York, were other sections noted for the exceptional quality of their potatoes.⁴

Potatoes were commonly grown in either the first or second year of the rotation, upon sod-land or land which had been in corn the previous year. In Maine they were frequently planted on burned-over land without ploughing. Farmers with a large acreage planted and harvested the crop with the aid of the plow. Others planted and dug the crop by hand. Some, after ploughing out the potatoes, picked up what could be easily found and then turned the store hogs into the field to gather the remainder. The land was commonly well manured in the drill before planting, and frequently plastered at the rate of about 2 bushels to the acre as soon as the potatoes were up.⁵ The relative merits of hilling up the plants and of manuring in the hill, as compared with level culture and broadcast manuring, were popular subjects of discussion. Yields of 400, 500, and even 700 bushels an acre were frequently reported.⁶

MARKETS FOR NEW ENGLAND POTATOES.

After supplying the local markets, large quantities of potatoes were annually hauled or shipped to seaport towns and sold for the southern market. They were also regarded as an excellent food for livestock, and their cost of production was so low that they were widely used for that purpose. In New England, about 1840, potatoes were used as raw material for the "home manufacture" of starch. Hopes were entertained of enhancing the value of the crop still further by the conversion of the starch first into sirup and then into sugar.⁷ Between 1840 and 1845 many starch mills were established in the potato-growing regions of Maine and Vermont. In Somerset County, Maine, 10 were reported under process of erection in 1845, and in Franklin County, 20. A starch mill in Mercer, Maine, was said to have manufactured 140,000 pounds of starch of an excellent quality.⁸ A correspondent wrote:⁹

"So readily may potatoes be produced by the mellow rich soil of the northern counties of Vermont that the price of 12½ and 18 cents a bushel, delivered at the starch mill, makes that one of the most profitable crops. In many towns starch mills have been in operation, and it has become common for an ordinary farmer to raise his one, two, and three thousand bushels of potatoes in a season."

THE APPEARANCE OF THE POTATO DISEASE—ITS RAVAGES.

The flourishing potato industry of the East received a severe check in 1843, and following years, by the appearance of a new disease, called "the rot" or the "potato disease," now recognized as the late blight of the potato. The first distinct appearance of the disease that excited attention was in 1843.¹⁰ In that year the potato crop of New England was estimated at about 20 per

³ *Ibid.*, 1843, p. 57.

⁴ *Ibid.*, 1844, p. 203.

⁵ N. Y. State Agric. Soc. *Transactions*, III (1843), p. 94.

⁶ *Ibid.*, I (1841), p. 102.

⁷ U. S. Patent Office, *Annual Report* 1844, p. 77.

⁸ *Ibid.*, 1843, p. 64.

⁹ *Ibid.*, 1844, p. 71.

¹⁰ *Ibid.*, 78.

cent less than in 1842, largely because of "the rot." In New York and Pennsylvania the loss was estimated at 30 per cent.¹¹

TABLE 47.—Potatoes: Production in the United States.
[Source: U. S. Censuses of 1840, 1850 and 1860.]

Geographic division and State.	1840.			1850.			1860.		
	Total (1000 bu.)	Per capita (bu.)	Per cent of U. S. total.	Total (1000 bu.)	Per capita (bu.)	Per cent of U. S. total.	Total (1000 bu.)	Per capita (bu.)	Per cent of U. S. total.
United States	108,298	6.3	100.0	65,798	2.8	100.0	111,149	3.5	100.0
Geographic Division:									
New England	35,180	15.7	32.5	19,618	7.2	29.8	21,344	6.8	19.2
Middle Atlantic	41,731	9.2	38.5	24,586	4.2	37.4	42,307	5.7	38.1
East North Central	11,885	4.1	11.0	13,418	3.0	20.4	27,182	3.9	24.5
West North Central	1 018	2.4	.9	1,236	1.4	1.9	7,831	3.6	7.0
Mountain				44	.6	.1	152	.9	.1
Pacific				101	1.0	.2	2,256	5.1	2.0
New England:									
Maine	10,392	20.7	9.6	3,436	5.9	5.2	6,375	10.1	5.7
New Hampshire	6,206	21.8	5.7	4,305	13.5	6.5	4,138	12.7	3.7
Vermont	8,870	30.4	8.2	4,951	15.8	7.5	5,253	16.7	4.7
Massachusetts	5,386	7.3	5.0	3,585	3.6	5.5	3,202	2.6	2.9
Rhode Island	912	8.4	.8	651	4.4	1.0	543	3.1	.5
Connecticut	3 414	11.0	3.2	2,690	7.3	4.1	1,833	4.0	1.7
Middle Atlantic:									
New York	30,123	12.4	27.8	15,398	5.0	23.4	26,447	6.8	23.8
New Jersey	2,072	5.6	1.9	3,207	6.6	4.9	4,172	6.2	3.8
Pennsylvania	9,536	5.5	8.8	5,981	2.6	9.1	11,688	4.0	10.5
East North Central:									
Ohio	5,805	3.8	5.4	5,058	2.6	7.7	8,695	3.7	7.8
Indiana	1,526	2.2	1.4	2,083	2.1	3.2	3,867	2.9	3.5
Illinois	2,025	2.3	1.9	2,515	3.0	3.8	5,541	3.2	5.0
Michigan	2,109	9.9	1.9	2,360	5.9	3.6	5,261	7.0	4.7
Wisconsin	420	13.6	.4	1,402	4.6	2.1	3,818	4.9	3.5
West North Central:									
Minnesota				21	3.5		2,565	14.9	2.3
Iowa	234	5.4	.2	276	1.4	.4	2,807	4.2	2.5
Missouri	784	2.0	.7	939	1.4	1.5	1,991	1.7	1.8
Dakota Territory							10	2.0	
Nebraska							162	5.6	.1
Kansas							296	2.8	.3
Mountain:									
New Mexico				^a			5		
Utah				44	3.9	.1	141	3.5	.1
Nevada							6	.8	
Pacific:									
Washington							164	14.1	.1
Oregon				92	6.9	.2	303	5.8	.3
California				9			1,789	4.7	1.6

^a Less than 500 bushels.

The appearance of the new crop enemy attracted much attention, but then there were no scientists, in the United States at least, who could explain the nature and cause of the disease. Various theories were propounded, among which insect origin, atmospheric influence, excess of growth caused by ma-

¹¹ *Ibid.*, 1843, pp. 57, 59.

nure, and seed deterioration were prominent. "Premature ripening caused by superabundant moisture of the soil in which they were allowed to remain too long";¹² "a vegetable cholera"; "imperfect process of assimilation"; "something in the atmosphere"; were some of the opinions expressed. But no single theory appeared to meet all the difficulties of the case.

When it was found that many sections had suffered from the new disease in 1843, it was hoped that it might prove temporary and that the loss was owing to some peculiarity of that year which would not occur again. But the attacks of the following years were even more severe. From Vermont, in 1844, came the report:¹³

"In the entire Green Mountain region, from the Berkshires on the south, to the Canada line on the north, there has been such a failure in the crop of potatoes that it is said there will be none left the present year for the manufacture of starch."

The Patent Office Report for 1844 reported the disease to have been thus far largely limited to the New England States, New York, northeastern Ohio, parts of Pennsylvania, and as far South as Virginia. Maine suffered its first severe loss in 1845. By 1848 the disease had reached Illinois, Wisconsin, and Iowa. In that year the loss in New England and the Middle States, while considerable, was not so great as in the preceding years. In the Northwestern States the rot prevailed more than ever, Ohio, Michigan, Wisconsin, Iowa, and Illinois suffering the heaviest losses.¹⁴ The Patent Office Report of 1847 stated:¹⁵

"The time was when this crop was numbered among our most successful ones. . . . But within a few years there has been a sorrowful change, and throughout almost the whole extent of the country where the common potato is cultivated, instead of ascertaining the amount of the crop, our attention is rather demanded to learn the amount of the loss suffered."

From Kennebec County, Maine, in 1850, it was reported:¹⁶

"Twelve years ago it was estimated that more than \$250,000 were paid for potatoes sent out of this state by way of the Kennebec River alone. Now there are not enough, which are free from disease, to supply the wants of the inhabitants."

DECLINE OF POTATO PRODUCTION SHOWN IN CENSUS OF 1850.

The potato crop of 1849 was generally reported as much better than that of the preceding few years. Reports of the time, however, corroborate the census figures, which show that the potato crop of the North Atlantic States had decreased nearly one-half since 1839. (See fig. 90.) The decrease was said to be the result both of smaller acreage and of lessened yields caused by "the potato rot." A total crop of 108,300,000 bushels was reported in 1839 and only 65,600,000 bushels in 1849. New Jersey and Delaware were the only northern States east of Indiana showing an increased production. In the West there was a small gain. The three States showing the greatest increase were Wisconsin, with 982,000 bushels gain over 1840, Illinois, 489,000 bushels gain, and Kentucky 437,000 bushels.

¹² *Ibid.*, 61.

¹³ *Ibid.*, 1844, p. 71.

¹⁴ *Ibid.*, 1848, p. 135.

¹⁵ *Ibid.*, 1847, p. 134.

¹⁶ *Ibid.*, 1850, *Agriculture*, p. 296.

In some sections of the West, near the Great Lakes and navigable rivers, the potato was extensively cultivated either for the lake trade or for the New Orleans market. In Ohio County, southeastern Indiana, potatoes were said to rank next to corn in importance. It was not unusual for a single farmer to cultivate 40 acres producing from 50 to 300 bushels an acre.¹⁷ It was reported in 1849 that in one day 35,800 barrels of potatoes were shipped from the port of Louisville, Kentucky, nearly all of which were raised within the

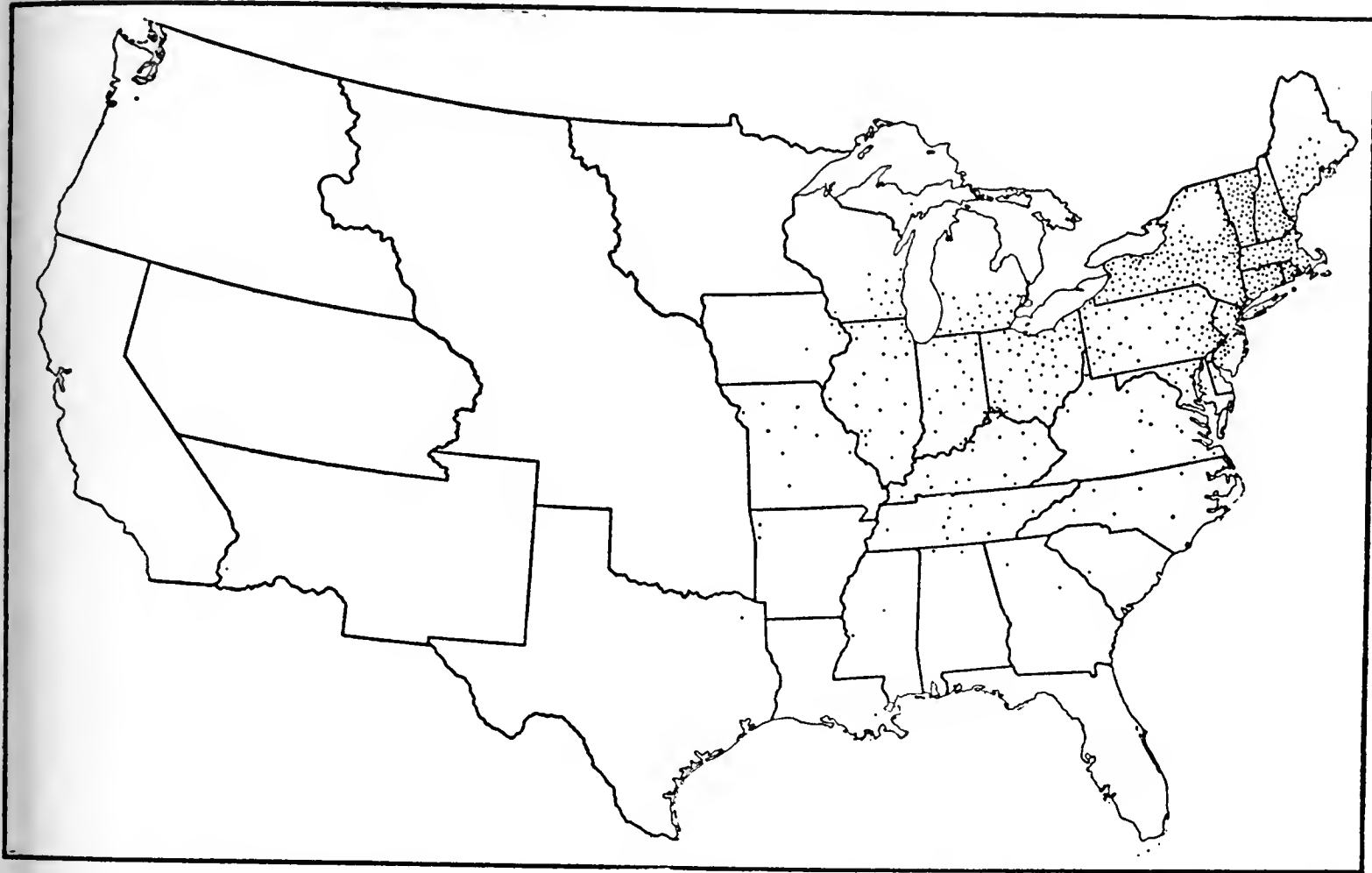


FIG. 90.—Potatoes, 1849. Each dot represents 100,000 bushels.

During the forties the blight caused a general reduction, especially in the East, in the potato crops.

immediate vicinity of the city. Several individuals had planted over 100 acres each.

HIGHER PRICES FOR POTATOES CAUSE BETTER CULTIVATION.

Not all people, however, considered the prevalence of the potato disease as a calamity. To the farmer the severity of the loss was considerably mitigated by the increased price received. From Oneida County, New York, in 1854 there came the following report:¹⁸

“Potatoes are successfully and somewhat extensively cultivated in this vicinity. Since the commencement of the ‘potato disease,’ the aggregate product has been greatly reduced, but the increased price has continued to furnish remunerating profit to the producer. While the average [production] has diminished more than one-half, the price per bushel has more than doubled, thus furnishing a greater return for a much less quantity of heavy cartage.”

¹⁷ Ind. State Agric. Soc., *1st Annual Report* (1852), p. 142.

¹⁸ U. S. Patent Office *Annual Report* 1854, *Agriculture*, 166.

A Rhode Island farmer wrote in 1849:¹⁹

“Our farmers realize more for the sale of potatoes than any other crop they produce. Previous to the rot, the price was from twenty to twenty-five cents per bushel; but since it has ranged from forty cents to one dollar and in some instances still higher. Average for the last six years not far from sixty cents.”

By 1860 increased attention was again given to the cultivation of the potato. (See fig. 91.) New varieties were introduced and greater care was taken in the selection of land and in the cultivation of the crop. Maine had nearly doubled her crop since the census of 1850. New Hampshire and Vermont reported about the same production as in 1849. In Massachusetts, Connecticut, and Rhode Island, on the other hand, there was a considerable

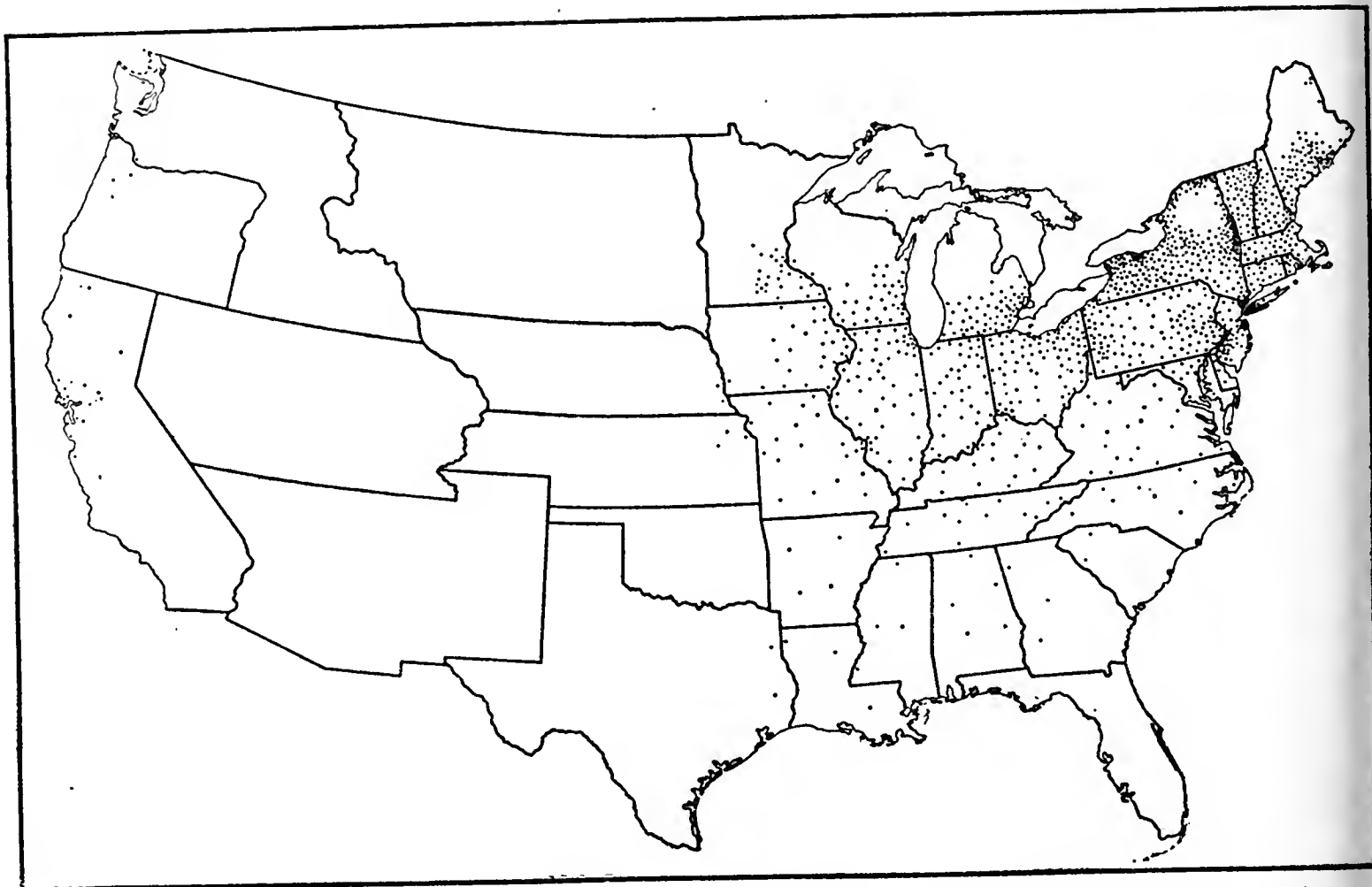


FIG. 91.—Potatoes, 1859. Each dot represents 100,000 bushels.

By 1860 the potato crop was again increasing in the East as well as in the West.

decrease. Pennsylvania had surpassed, and New York had nearly regained, the figures of 1839. Farther west there had been a general increase. The total crop of the country was 110,600,000 bushels in 1859 as compared with 108,300,000 bushels in 1839. The manner of culture in 1860 was nearly the same as in 1840.

Owing to lessened yields and higher prices after the appearance of “the potato disease,” the use of potatoes for stock feed and for the manufacture of starch fell off. One Vermont county reported in 1853:²⁰

“Our country sent 1,000 tons of starch to market, before the potato was diseased. We do not now exceed 20 tons a year, as only the refuse potatoes are worked. We formerly raised 300 bushels per acre, but now 150 is an average yield.”

¹⁹ *Ibid.*, 1849, p. 97.

²⁰ U. S. Patent Office, *Annual Report 1853, Agriculture*, 174.

ROOT CROPS—CARROTS, TURNIPS, ETC.

While root crops other than potatoes were not extensively grown in 1840, their culture was generally increasing in favor, especially in New England and New York. The carrot was regarded as especially good feed for driving and teaming horses and for dairy cows. Turnips, sugar beets, rutabagas, and other roots were frequently grown in small lots for cattle, sheep, and hogs. The potato, however, was the crop chiefly used for stock-feeding.

The occurrence of the "potato disease" and consequent increased selling price of potatoes somewhat stimulated the production of roots as a fodder crop. The sugar beet was commended with spirit by many during the thirties, the carrot during the forties. The New York State census of 1855 reported the following roots produced in the state in the previous year :

	Bushels.
Turnips	985,500
Carrots	478,000
Beets	29,000
Rutabagas	3,000
Miscellaneous Roots	54,000

As root crops were commonly estimated to yield about 500 bushels an acre, the table indicates only a small acreage. In New England, turnips were commonly sown in the midst of the corn at the last cultivation, or on land broken up for reseeding.²¹

The large amount of labor necessary to produce root crops prevented their coming into general use. They were for a time cultivated by many farmers as a field crop, but their extensive culture proved disappointing and was soon discontinued. "So large a field as an acre is rarely seen,"²² commented a correspondent from Berkshire County, Massachusetts, in 1847. Another from Ontario County, New York,²³ in 1851 reported that

"The culture of roots in this country is not extensive. Farmers who come to this country from Scotland and England, after a few years' trial, usually come to the conclusion that Indian corn is raised with less labor, and will make more fat than the same cost of roots."

²¹ U. S. Patent Office, *Annual Report 1850, Agriculture*, 273.

²² *Ibid.*, 1847, p. 359.

²³ *Ibid.*, 1851, *Agriculture*, 219.

CHAPTER XXXII.—FRUITS AND MINOR CROPS.

In 1840, apple orchards were to be found throughout the agricultural region of the northeastern States. A majority of the trees, however, were native stock and the surplus fruit was used largely for cider-making and the feeding of livestock.¹ New York and New England farmers generally tried to raise enough apples for the consumption of their families and to make a few barrels of cider.² As late as 1838 the planting of apple orchards was recommended for the single purpose of feeding the apples to hogs, to beef cattle, or even to milch cows.³ So plentiful was the supply of apples, and so limited the demand, that cider was frequently a drug on the market.⁴ In the Mohawk Valley apples were a source of considerable income. Both the Hudson and the Mohawk Valleys were widely known for the extent of their apple, pear, and peach orchards.

INCREASED PLANTING OF ORCHARDS AFTER 1840.

After 1840, and in an increasing degree after 1847, much attention was given to the planting of orchards. Fruit-tree nurseries multiplied rapidly,⁵ interest was taken in the formation of horticultural societies, improved varieties of apples were planted, and the old native fruit trees were frequently grafted.⁶ By 1850 it seemed, indeed, as if every eastern farmer were planting an apple orchard. The growth of cities was furnishing a market for the fresh fruit, and the development of transportation was improving the means of reaching the market. Oneida County, in the Mohawk Valley, it was estimated, shipped nearly 18,000 barrels of apples in 1847.⁷ Wayne County, on the shore of Lake Ontario, was said to have shipped more than 30,000 bushels of dried fruit in 1848.⁸ In Ohio, orcharding was developing along the shores of Lake Erie, and by 1855 Michigan was shipping fruit.⁹ As early as 1843, it was said that 2,000 barrels of cranberries had been sent from Michigan in one year.¹⁰

PEACH ORCHARDS IN DELAWARE AND MARYLAND.

Other prominent fruit-growing districts of this period were Long Island, central and southern New Jersey, Delaware, and Maryland.¹¹ Delaware and

¹ U. S. Patent Office, *Annual Report* 1852, *Agriculture*, 157; 1850, p. 205.

² *Ibid.*, 1853, p. 270.

³ *2d Report, Agriculture of Massachusetts* (1838), p. 141.

⁴ *Cultivator*, new series, VI (1849), p. 23; U. S. Patent Office, *Annual Report* 1851, *Agriculture*, 152.

⁵ N. Y. State Agric. Soc. *Transactions*, III (1843), p. 470.

⁶ U. S. Patent Office, *Annual Report* 1850, *Agriculture*, 274; 1851, p. 168.

⁷ *Ibid.*, 1847, p. 363.

⁸ *Cultivator*, new series, VII (1850), p. 174.

⁹ *Country Gentleman*, V (1855), p. 58.

¹⁰ U. S. Patent Office, *Annual Report* 1843, p. 111.

¹¹ *Ibid.*, (1847), p. 196; *Country Gentleman*, IV (1854), p. 90; *Cultivator*, new series, VIII (1851), p. 92.

Maryland especially were famous for the extent of their peach orchards. Water transportation enabled them to place their perishable product upon the markets of Philadelphia, Baltimore, and New York within a relatively short time. In 1847 the peach crop of the State of Delaware was estimated at 300,000 baskets.¹²

Many large orchards had been developed. That of Major Reybold & Sons, of New Castle County, Delaware, was thus described in 1848:¹³

"Quantity of peaches sent to market (to the 29th of August inclusive) by Major Reybold from his Maryland and Delaware orchards; . . . baskets, 63,344. Number of baskets employed for transit, 40,000 to 50,000. Number acres of orcharding, 1,090. Number of trees in orchards, 117,720. Steamboats were constantly arriving and departing loaded with the produce of these orchards, which were sent to New York and Boston, as well as to Philadelphia and near markets. It is probable that before the close of the season as many as 80,000 baskets, if not more, were thus disposed of from these orchards."

The *New York Tribune* estimated the number of baskets of peaches sold in New York in 1844 at 12,000 daily during the peach season.¹⁴ In good seasons prices were said to vary from 5 to 50 cents a basket, and in poor years went as high as \$1.50 to \$3.¹⁵

VINEYARDS IN THE OHIO AND MISSOURI VALLEYS.

The manufacture of wine was receiving attention principally in the Ohio Valley and to a less extent in the Missouri River Valley. Around Cincinnati, Ohio, then the center of the grape-growing industry of the country, many of the roughest hillsides were being "trenched and benched" for vineyards.¹⁶ Nicholas Longworth, "the father of successful vine culture in the West,"¹⁷ who was the largest wine-maker in Ohio, was reported in 1844 to have a vineyard of 91 acres, promising a yield of nearly 20,000 gallons.¹⁸ In 1856 he was said to have bottled about 150,000 quarts.¹⁹ In 1853, the Patent Office reported 1,500 acres of land devoted to grape-growing in Ohio, 200 or 300 acres in Indiana, and about 100 (?) acres in Illinois and Kentucky, making about 2,500 acres in all. It was said in 1854 that within 20 miles of Cincinnati some 1,400 acres were planted to Catawba, "the great wine grape."²⁰ The vineyards were cultivated chiefly by Germans, many of them from the wine districts of the Rhine, who found in this industry a means of employing the help of the entire family.²¹ Nicholas Longworth, John Dufour, and others operated extensive vineyards on the tenant system, with newly arrived German immigrants as tenants. The census of 1860 reported the Ohio Valley as the leading wine-making district of the country.

¹² U. S. Patent Office, *Annual Report* 1847, p. 196.

¹³ *Ibid.*, 1845, pp. 307, 954.

¹⁴ *Ibid.*, 308.

¹⁵ *Ibid.*, 1849, p. 121.

¹⁶ Ohio State Board of Agric., *3d Annual Report* (1848), p. 59; U. S. Patent Office, *Annual Report* 1845, p. 937.

¹⁷ U. S. Census of 1860, *Agriculture*, p. clx.

¹⁸ U. S. Patent Office, *Annual Reports* 1845, p. 312.

¹⁹ *Country Gentleman*, VIII (1856), p. 20.

²⁰ U. S. Patent Office, *Annual Report* 1854, *Agriculture*, 265.

²¹ *Ibid.*, 313; 1845, p. 936.

In 1849, California ranked first in amount of wine produced, with 58,000 gallons, Ohio second, with 48,200 gallons, Pennsylvania third, with 25,600 gallons, and Indiana fourth, with 14,000 gallons.²² In 1859, Ohio ranked first in order of production with 568,600 gallons, California second with 246,500 gallons,²³ Kentucky third with 179,900 gallons, Indiana fourth with 102,900 gallons, New York fifth with 61,400 gallons and North Carolina sixth with 54,100 gallons. The total for the country was 1,618,000 gallons. The census of 1860 stated:²⁴

“The cultivation [of grapes] had spread over all the western and southwestern States, and we thought then (1850), as we do now, that wine-growing would eventually be ranked amongst our most important agricultural interests. This the next generation may possibly realize.”

SPECIAL CROPS.

Many minor crops attracted attention during this period, some of which were tried out with much enthusiasm. The memory of the spectacular rise and fall of the famous “*Morus multicaulis* speculation” was fresh in mind in 1840, and was by no means entirely forgotten in 1860. It was still urged that the development of silk production would provide a means of utilizing the spare hours of the women and children on the farm.

About 1833, much interest was centered in the growing of sugar beets. France was successfully manufacturing sugar from beets at that time, and it was thought that beet sugar could also be made in America. Many farmers and promoters in Pennsylvania and the Ohio Valley for a time had visions of a large sugar-beet industry in their home communities. After numerous trials, however, the enthusiasm subsided.

About 1855 the United States Patent Office introduced sorghum into the United States and widely urged its production for sugar. Farmers of the West, however, still remembering the *Morus multicaulis* speculation, were distrustful about embarking in the new enterprise, and before the Civil War it was not widely tried. The production of sugar from cornstalks continued to attract attention, from promoters at least.

Broom corn was another special crop which attracted considerable attention. Grown mostly in small patches, a part of the corn was sold and the remainder was worked up into brooms on the farm during the winter. A few farmers went into the business extensively. In the Muskingum Valley of Ohio, in 1845, one farm was reported to have 400 acres of broom corn; another, in Schenectady, New York, 200 acres. In the Connecticut Valley in Massachusetts, broom corn was grown rather extensively.²⁵

TOBACCO IN NEW ENGLAND AND NEW YORK.

The early history of tobacco culture in New England has been discussed in an earlier chapter.²⁶ It was reported from Massachusetts in 1844 that on

²² U. S. Census of 1850, *Agriculture*, p. lxxxiii; *Census of 1860*, p. 190.

²³ U. S. Census of 1860, *Agriculture*, 186; Calif. State Agric. Soc. *Transactions*, 1858, p. 52, 113.

²⁴ *Agriculture*, p. clx.

²⁵ See p. 245.

²⁶ See pp. 98, 246.

TABLE 48.—*Tobacco: Production in the United States.*

[Source: U. S. Censuses of 1840, 1850 and 1860.]

Geographic division and State.	1840.			1850.			1860.		
	Total (1000 lbs.)	Per capita (lbs.)	Per cent of U. S. total.	Total (1000 lbs.)	Per capita (lbs.)	Per cent of U. S. total.	Total (1000 lbs.)	Per capita (lbs.)	Per cent of U. S. total.
United States	219,163	12.8	100.0	199,753	8.6	100.0	434,209	13.8	100.0
Geographic Division:									
New England	538	.2	.2	1,406	.5	.7	9,266	3.0	2.1
Middle Atlantic ...	328	.1	.1	996	.2	.5	9,096	1.2	2.1
East North Central.	8,329	2.8	3.8	12,343	2.7	6.2	40,180	5.8	9.3
West North Central	9,076	21.3	4.1	17,120	19.4	8.6	25,452	11.7	5.9
Mountain				9	.1		7		
Pacific				1			4		
New England:									
Maine	^a						1		
New Hampshire ...	^a			^a			19	.1	
Vermont	1						12		
Massachusetts	65	.1		138	.1	.1	3,233	2.6	.7
Rhode Island	^a						1		
Connecticut	472	1.5	.2	1,268	3.4	.6	6,000	13.0	1.4
Middle Atlantic:									
New York	1			83			5,765	1.5	1.3
New Jersey	2			^a			149	.2	
Pennsylvania	325	.2	.1	913		.5	3,182	1.1	.8
East North Central:									
Ohio	5,942	3.9	2.7	10,455	5.3	5.3	25,093	10.7	5.8
Indiana	1,820	2.7	.8	1,045	1.1	.5	7,994	5.9	1.9
Illinois	565	1.2	.3	841	1.0	.4	6,885	4.0	1.6
Michigan	2			1			121	.2	
Wisconsin	^a			1			87	.1	
West North Central:									
Minnesota							39	.2	
Iowa	8	.2		6			303	.4	.1
Missouri	9,068	23.6	4.1	17,114	25.1	8.6	25,086	21.2	5.8
Dakota Territory ..							^a		
Nebraska							4	.1	
Kansas							20	.2	
Mountain:									
New Mexico				9	.1		7	.1	
Utah				^a					
Pacific:									
Washington							^a		
Oregon				^a			1		
California				1			3		

^a Less than 500 pounds

account of the profit derived from tobacco-growing in the vicinity of the Connecticut River in the northern part of the State, more land was devoted to its use from year to year. Henry Watson, of East Windsor, Connecticut, wrote in that year: ²⁷

“We grow in this town annually about three hundred tons of tobacco, and in the valley of the Connecticut about five hundred tons are grown annually. The yield the last year (1843) was less than usual, 1,500 pounds being about the average per acre. . . . We have two varieties of the weed, the broad leaf and the narrow leaf—the latter is about two weeks the earliest.”

Another reported that in 1843 in the town of East Windsor and in 5 or 6 adjoining towns, within a circumference of 25 miles, 2,500 tons were produced annually. The Connecticut Valley tobacco was said to be better for cigar wrappers than that of the South.²⁸

The Springfield (Massachusetts) *Republican* reported in 1845 that the cultivation of the tobacco plant had been very largely undertaken in that town and vicinity within a year or two. One man was said to have 26 seeded acres.²⁹ In 1850 it was said that 800 tons of tobacco were grown in the Connecticut Valley on a tract extending 40 miles northward from Hartford. Connecticut seed leaf, the principal variety, was said to bring, usually, double the price of the tobacco grown in Virginia and Kentucky.

It was reported from Oneida County, New York, in 1851, that several farmers had been induced to enter largely into tobacco culture.³⁰ A farmer in Onondago County had 10 acres in 1847.³¹ After 1850 the New York acreage expanded rapidly until in 1860 it was nearly equal to that of Connecticut. Ohio produced 5,942,000 pounds of tobacco in 1839, nearly all of which was grown in a few southeastern counties. By 1860, Ohio's production had increased to 25,100,000 pounds, a considerable portion of which was produced in the southwestern counties.

HOPS.

Nearly 1,250,000 pounds of hops were reported by the census of 1840. Of this amount, over 75 per cent was produced in two very limited areas, one in central Massachusetts and southern New Hampshire, the other in central New York in the vicinity of Otsego and Madison counties. By 1860 production had considerably declined in the old hop-growing region of New England, while a new center was rising in Vermont. New York had become the hop-growing State of the Union. It produced nearly 90 per cent of the total crop of the country, and over one-third of the crop of this State was in the single county of Otsego.

²⁷ U. S. Patent Office, *Annual Report* 1845, p. 740.

²⁸ *Ibid.*, 1844, p. 101.

²⁹ *Ibid.*, 1845, p. 264.

³⁰ *Ibid.*, 1851, *Agriculture*, 197.

³¹ *Ibid.*, 1847, p. 167.

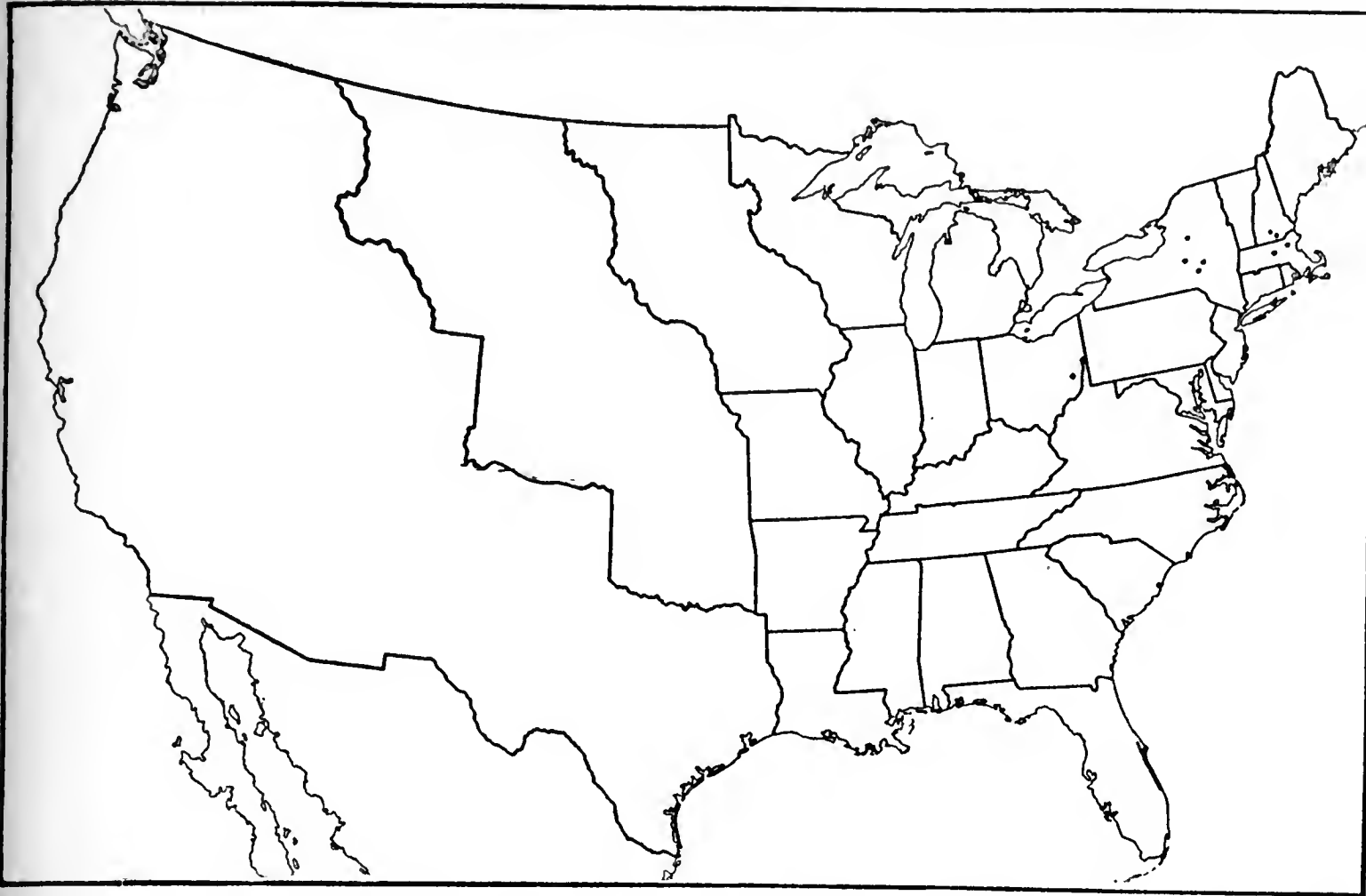


FIG. 92.—Hops, 1839. Each dot represents 100,000 pounds.

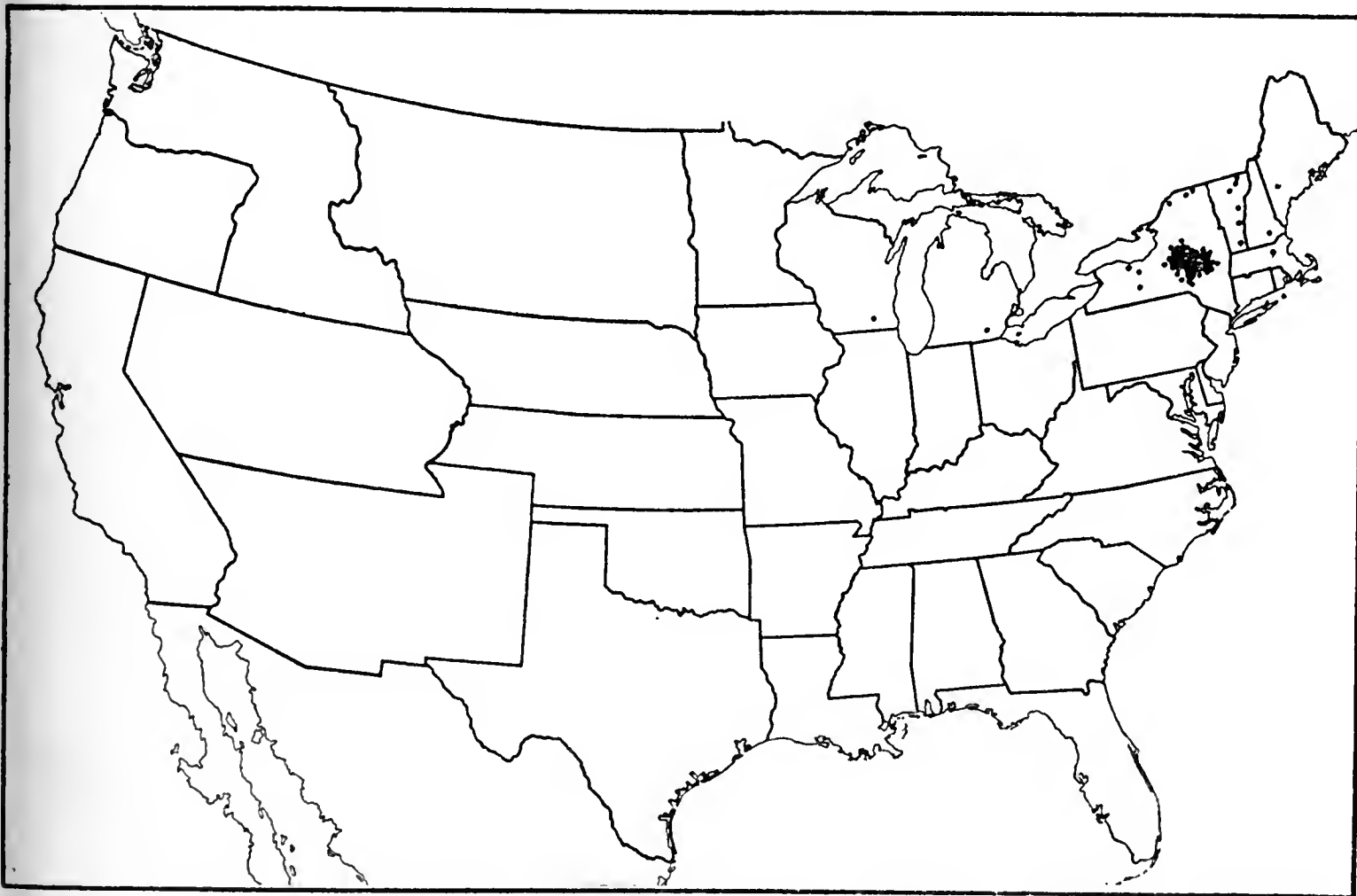


FIG. 93.—Hops, 1859. Each dot represents 100,000 pounds.

TABLE 49.—*Hops: Production in the United States.*

[Source: U. S. Censuses of 1840, 1850 and 1860.]

Geographic division and State.	1840.			1850.			1860.		
	Total (1000 lbs.)	Per 1,000 population (lbs.)	Per cent of U. S. total.	Total (1000 lbs.)	Per 1,000 population (lbs.)	Per cent of U. S. total.	Total (1000 lbs.)	Per 1,000 population (lbs.)	Per cent of U. S. total.
United States	1,239	73	100.0	3,497	151	100.0	10,992	350	100.0
Geographic Division:									
New England	588	263	47.5	708	259	20.2	984	314	9.0
Middle Atlantic	501	111	40.5	2,561	434	73.2	9,719	1,303	88.0
East North Central.	130	44	10.5	187	41	5.3	259	37	2.0
West North Central	1	2	.1	12	14	.4	5	2	.....
Mountain .....	.....	.....	.....	^a	1	.....	1	3	.....
Pacific .....	.....	.....	.....	^a	.....	.....	1	1	.....
New England:									
Maine	37	74	3.0	40	69	1.1	103	164	1.0
New Hampshire ...	243	855	19.6	257	809	7.4	130	400	1.0
Vermont	48	165	3.9	288	917	8.2	639	2,027	5.0
Massachusetts	255	345	20.6	122	122	3.5	111	90	1.0
Rhode Island	^a	1	.....	^a	2	.....	^a	.....	.....
Connecticut	5	15	.4	1	1	.....	1	2	.....
Middle Atlantic:									
New York	447	184	36.1	2,537	819	72.5	9,672	2,492	88.0
New Jersey	5	12	.4	2	4	.1	4	6	.....
Pennsylvania	49	29	4.0	22	10	.6	43	15	.....
East North Central:									
Ohio	62	41	5.0	64	32	1.8	27	12	.....
Indiana	39	56	3.1	93	94	2.6	28	21	.....
Illinois	18	37	1.5	3	4	.1	7	4	.....
Michigan	11	54	.9	11	27	.3	61	81	.....
Wisconsin	^a	4	.....	16	52	.5	136	175	1.0
West North Central:									
Minnesota .....	.....	.....	.....	.....	.....	.....	^a	1	.....
Iowa	^a	2	.....	8	43	.3	2	3	.....
Missouri	1	2	.1	4	6	.1	3	2	.....
Nebraska .....	.....	.....	.....	.....	.....	.....	^a	1	.....
Kansas .....	.....	.....	.....	.....	.....	.....	^a	2	.....
Mountain:									
Utah .....	.....	.....	.....	^a	4	.....	1	14	.....
Pacific:									
Washington .....	.....	.....	.....	.....	.....	.....	^a	4	.....
Oregon .....	.....	.....	.....	^a	1	.....	1	9	.....
California .....	.....	.....	.....	.....	.....	.....	^a	.....	.....

^a Less than 500 pounds.

CHAPTER XXXIII.—BEEF PRODUCTION.

THE CENTERS OF CATTLE RAISING IN 1840.

The number of cattle in the United States was first reported in the census of 1840. As all cattle were reported together it is impossible to separate the dairy from the beef cattle in that year. The leading cattle sections of the North were then New York, New England, Ohio, and the bluegrass region of Kentucky. Eastern and western Pennsylvania, New Jersey, parts of Maryland, and the northern portion of Delaware were other important cattle areas.

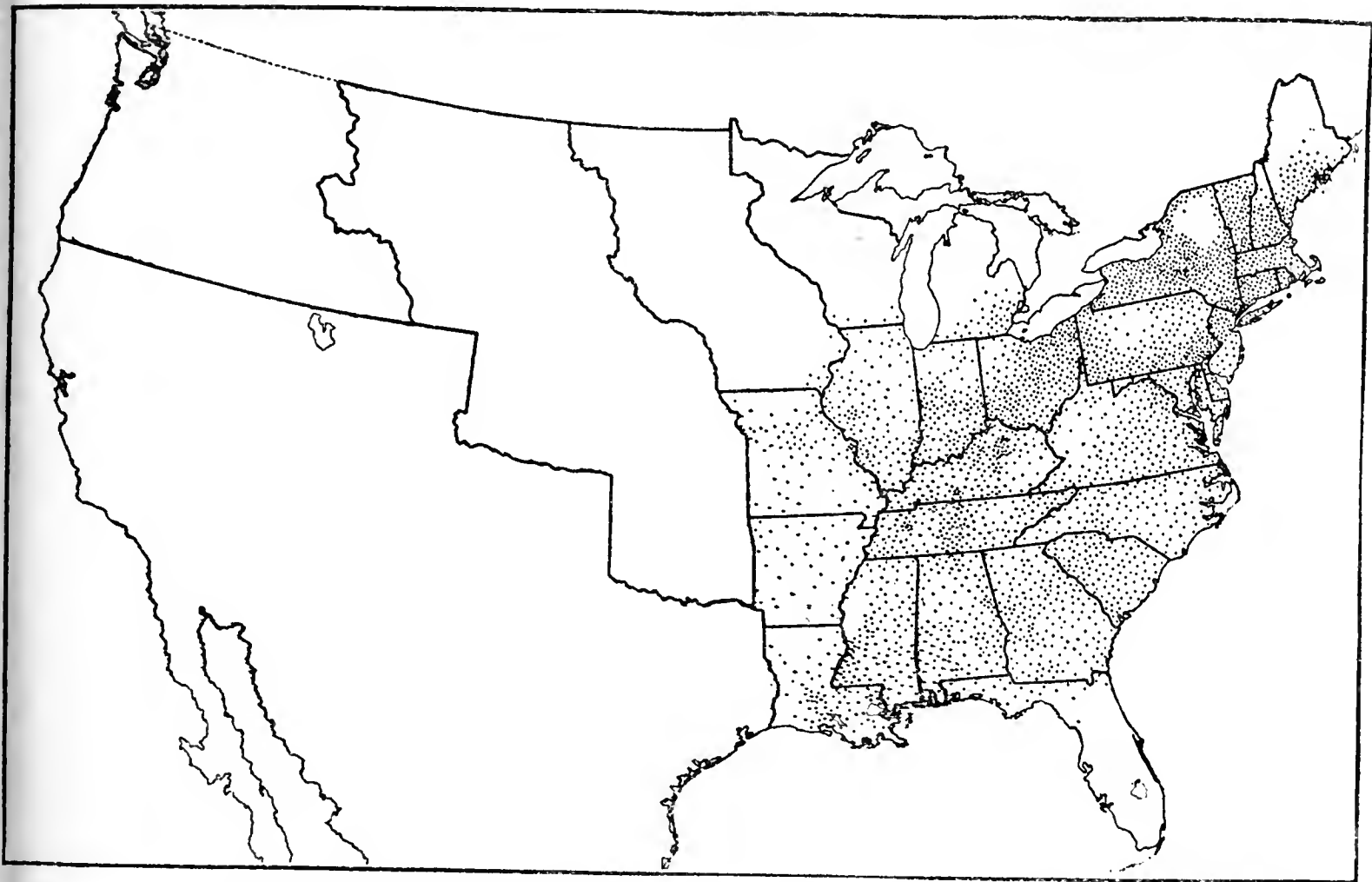


FIG. 94.—All cattle, 1840. Each dot represents 5,000 head.

Cattle grazing was early developed in the West. The limestone region of Kentucky and the Miami and Scioto river valleys of Ohio were prominent western cattle fattening sections. The vicinity of Chester County, Pennsylvania, was a center in the East.

(See fig. 94.) Cattle were generally distributed throughout the agricultural regions east of Ohio. New York and southwestern Pennsylvania were the most prominent cattle districts of the East, and west of Pennsylvania, Ohio and the bluegrass region of Kentucky were the important areas. In the sparsely settled States of Indiana, Illinois, and Missouri cattle were abundant and the proportion of cattle to population was larger here than in any other group of States. Cattle were still driven into the newly settled regions of Michigan, Wisconsin, and Iowa, as well as into central and eastern Maine.

The census of 1850 showed little change in the centers of the cattle industry. (Fig. 95.) In every northern State east of Ohio, except Maine, cattle were less numerous. Ohio reported a slight increase. In Indiana, Illinois, Wisconsin, and Iowa cattle had increased, but not in proportion to the growth of population nor to the development of other lines of production. Missouri showed

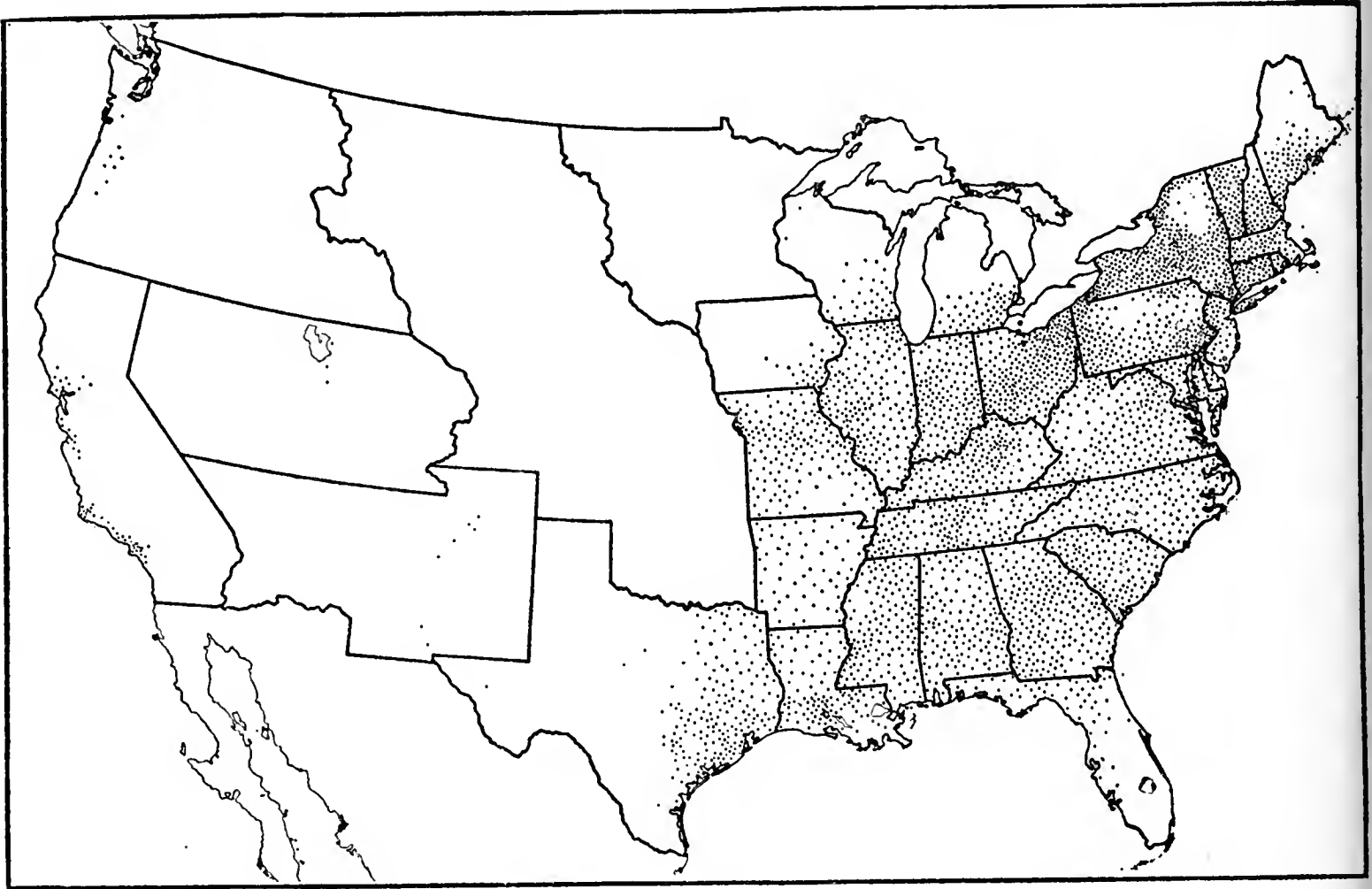


FIG. 95.—All cattle, 1850. Each dot represents 5,000 head.

During the forties there was a general increase in neat cattle in the western region, chiefly in the corn and wheat growing regions.

a considerable increase. On the Pacific Coast, California reported 262,700 neat cattle, and Oregon 41,700.

BEEF CATTLE IN THE WEST.

The outstanding centers of the beef-cattle industry of the country from 1840 to 1860 were the Scioto Valley of Ohio and the bluegrass region of Kentucky. Situated on the eastern edge of the great surplus-corn-growing area, these favored districts were nearer to eastern markets than any other of the regions producing cheap corn. Consequently, they became the leading sections in the West for the fattening of cattle before their long journey over the mountains to supply the eastern markets. Cheaper feed was the advantage which enabled the western cattleman to send his livestock over the mountains and still place them on the eastern market in competition with the eastern feeder.

The early settlers of the Scioto Valley had found that although large crops of Indian corn could be raised with but little labor, there was no accessible and remunerative market for the crop. They had therefore devised the plan

of fattening large herds of cattle on corn and then driving the cattle to eastern markets. Since the year of the first drive, about 1805,¹ the number fed had gradually increased, until by 1850 it reached between 15,000 and 16,000 head

TABLE 50.—*Neat Cattle: Number in the United States.*

[Source: U. S. censuses of 1840, 1850, and 1860.]

Geographic division and states.	1840.			1850.			1860.		
	Total (thousands).	Per 1000 population.	Per cent of U.S. total.	Total (thousands).	Per 1000 population.	Per cent of U.S. total.	Total (thousands).	Per 1000 population.	Per cent of U.S. total.
United States	14,972	877	100.0	17,779	767	100.0	25 620	815	100.0
Geographical Division:									
New England	1,545	691	10.3	1,469	538	8.3	1,573	502	6.1
Middle Atlantic	3,304	730	22.1	3,243	550	18.2	3,631	487	14.2
East North Central	2,680	916	17.9	3,444	761	19.4	5,290	764	20.6
West North Central	472	1,106	3.2	930	1,057	5.2	1,960	903	7.6
Mountain . . . . .	....	....	....	46	625	.3	128	733	.5
Pacific . . . . .	....	....	....	304	2,875	1.7	1,363	3,069	5.3
New England:									
Maine	327	652	2.2	343	589	1.9	377	600	1.5
New Hampshire	275	968	1.8	268	843	1.5	265	811	1.0
Vermont	384	1,316	2.6	349	1,111	2.0	370	1,176	1.4
Massachusetts	283	383	1.9	260	261	1.5	280	227	1.1
Rhode Island	37	339	.2	36	246	.2	39	224	.2
Connecticut	239	770	1.6	213	574	1.2	242	526	.9
Middle Atlantic:									
New York	1,911	787	12.8	1,878	606	10.5	1,973	508	7.7
New Jersey	220	590	1.5	211	432	1.2	239	355	.9
Pennsylvania	1,173	680	7.8	1,154	499	6.5	1,419	488	5.6
East North Central:									
Ohio	1,218	802	8.1	1,359	686	7.7	1,635	699	6.4
Indiana	620	904	4.2	715	723	4.0	1,069	792	4.2
Illinois	627	1,315	4.2	912	1,071	5.1	1,584	925	6.2
Michigan	185	872	1.2	275	690	1.6	480	641	1.8
Wisconsin	30	978	.2	183	601	1.0	522	673	2.0
West North Central:									
Minnesota . . . . .	....	....	....	2	329	....	119	693	.5
Iowa	38	883	.3	137	711	.8	540	800	2.1
Missouri	434	1,131	2.9	791	1 160	4.4	1,169	989	4.5
Dakota Territory . . . . .	....	....	....	....	....	....	2	166	....
Nebraska . . . . .	....	....	....	....	....	....	37	1,290	.1
Kansas . . . . .	....	....	....	....	....	....	93	872	.4
Mountain:									
New Mexico . . . . .	....	....	....	33	536	.2	89	949	.4
Utah . . . . .	....	....	....	13	1,109	.1	34	847	.1
Nevada . . . . .	....	....	....	....	....	....	5	798	....
Pacific:									
Washington . . . . .	....	....	....	....	....	....	29	2,455	.1
Oregon . . . . .	....	....	....	42	3,139	.2	154	2,938	.6
California . . . . .	....	....	....	262	2,837	1.5	1,180	3,106	4.6

annually. It was reported in 1849 that with the exception of a few hundred head slaughtered and packed at Chillicothe for the English trade, all the fat cattle of the valley were driven East.² Nine-tenths of the corn-fed cattle from

¹ See p. 177.² Ohio State Board of Agric., *3d Annual Report* (1848), p. 162.

the West arriving on the eastern markets about 1850 were said to be from Ohio and Kentucky, but chiefly from Ohio.³ In some instances between 400 and 600 head were fed by a single farmer and driven to the eastern markets. 100 head, however, was a more usual number.⁴

METHOD OF FEEDING CATTLE IN THE SCIOTO VALLEY.

Cattle feeders in the Scioto Valley of Ohio and the bluegrass region of Kentucky from 1840 to 1850 usually divided their cattle into two lots during the feeding season. The animals which were to be marketed the following spring or summer were put on "full-feed" and the remainder on "half-feed." Those upon "full-feed" were given corn on the fodder, equivalent to one-half bushel of shelled corn, and those upon "half-feed" were fed one-half as much. Two hogs followed a "full-fed" steer and one a "half-fed" steer. It was expected that each steer, when full fed, would consume about 60 bushels of corn during the feeding season. It was the practice to feed out the corn on land which needed manuring. Corn was cut and shocked 14 by 16 hills to the shock. In feeding, a low wagon was used to haul the shock corn from the field where grown to the field where the feeding was done. In unloading, the wagon was driven across the field, one man riding the wagon and throwing the corn, alternately on each side, about 4 stalks in a place and 10 feet apart, and so on at each successive feeding until the corn, at different feedings, had been regularly distributed over the whole field. This method of distributing the corn was intended to furnish sufficient room for the cattle and to give every part of the field a due proportion of manure. The practice came into the valley from Virginia and spread west with the westward movement of Virginia and Maryland people.⁵

Outside the Scioto Valley there was considerable diversity in the mode of feeding corn. Some graziers followed the practice of feeding down their corn by turning in both cattle and hogs to consume what they wished. The fat cattle and fat hogs were first admitted to consume what they wished, next the store cattle and store hogs. The more common practice, however, was the Virginia method. Others pulled the ears from the stalks and then pastured their cattle on the standing stalks.⁶ In the grazing districts of Ohio, cattle, until 3 years old, were generally kept running on pasture summer and winter. The scant feed in the latter season was supplemented from the stack of corn-fodder from which the ears had been husked.

The stock for feeding consisted mostly of four or five year old steers. The period of feeding on corn was from 4 to 5½ months. The feeding season usually began about the first of November, a little later or a little sooner according to the season, and according to whether the cattle about to be fed were intended for an early or late market. The driving began about the middle of February and continued until the first or middle of June, the drover arriving in New

³ *U. S. Census of 1860, Agriculture*, p. cxxxix.

⁴ *Cultivator*, new series, VIII (1851), p. 325; Ohio State Board of Agric., *3d Annual Report* (1848), p. 163.

⁵ Beatty, *Essays on Practical Agriculture*, p. 265.

⁶ U. S. Patent Office, *Annual Report* (1845), p. 384.

York or other eastern markets between the middle of April and first of August.⁷ As to the cost of driving, a writer in the *Cultivator* in 1851 stated:⁸

"It costs at a low average, to get a drove of cattle from the Scioto Valley into the New York market, from \$10.00 to \$12.00 per head, without including the loss of flesh sustained by driving, which may safely be calculated at \$10.00 per head, reckoning beef at \$7.00 per hundred lbs. which is much below the New York price."

VARIOUS GROUPS INTERESTED IN THE FATTENING OF WESTERN CATTLE.

The fat-cattle business of the West, as carried on in 1849, employed four classes of persons. There was first the raiser of cattle, who sold his animals at 1 or 2 years old, or even 3, to the grazier. The raisers were chiefly in the great prairie regions of Illinois, Missouri, and Iowa, or in the wheat-growing regions of Ohio. A second class were the graziers, who were chiefly the owners or renters of large tracts of pasture land, notably in Madison, Fayette, and Union Counties, Ohio, on the western edge of the Scioto Valley. The cattle feeders composed a third group. They had farms in the corn-raising district of Ross, Pickaway, Franklin, and Madison Counties, and took the cattle in the autumn and fed them on corn till they were fat enough for the markets of the Atlantic cities. Sometimes two of these occupations were united, but not often. The fourth class of persons comprised the bankers who furnished the funds. The banks of Chillicothe, Columbus, and Xenia were said to do much of this sort of business.⁹ Renick¹⁰ wrote in 1848:

"Perhaps a majority of the cattle fed in the valley are raised in Ohio, or at least have been in the state one year previous to the feeding of them; though a considerable portion of the number fed, are drawn from the states of Indiana and Illinois, and even Missouri furnishes a part; though the western cattle are generally too thin in flesh to feed to advantage, unless they are brought in the previous year; but when made fat they are generally preferred by the drovers, (though not so profitable to the feeder), to our home raised cattle, for the reason that they are better travellers and consequently will lose comparatively less in weight, in the long drive they have to make to an Eastern market."

GRAZING IN NORTHERN OHIO.

While some cattle from north of the National Road in Ohio were corn-fed and driven to eastern markets, by far the greater number were only grass-fed, or slightly corn fed. They were either sold to drovers from the feeding regions to the South, or were sent east across the Alleghenies where they were disposed of to eastern feeders, or were sold on the Boston, New York, Philadelphia, or Baltimore markets as grass-fed beef. Many were disposed of in Cincinnati or in eastern packing centers. The number of these grass-fed cattle driven east from Ohio was much greater than that of corn-fed cattle. From Madison County alone, in the grazing and feeding section, in 7 months of 1848, nearly 20,000 head of cattle, 3 years old and upwards, were said to have been sold and driven mostly to the New York and Pennsylvania markets.¹¹

⁷ U. S. Census of 1860, *Agriculture*, cxxxix.

⁸ *Cultivator*, new series, VIII (1851), p. 325.

⁹ *Prairie Farmer*, IX (1849), p. 305.

¹⁰ Ohio State Board of Agric., *3d Annual Report* (1848), p. 163.

¹¹ *Ibid.*, p. 92.

In the dairy section of the Western Reserve a few cattle were driven in from other sections to be fed, but a large part of the cattle slaughtered consisted of dry cows, heifers, and steers.¹² In the wheat-raising regions of eastern Ohio, considerable stock was raised, grazing in the summer and consuming the wheat straw or corn stover in winter. Some were fattened, but many, owing to the relative scarcity of corn, were driven to the Scioto Valley or to eastern feeding districts to be prepared for market. Gallia, situated among the hills to the east of the Scioto Valley, was said to be a center for gathering lean cattle to be taken to the valley of the Scioto or to that of the Ohio.¹³

CATTLE GRAZING ON THE OPEN PRAIRIES.

To the west, in Indiana, Illinois, Missouri, and Iowa, the open prairies furnished abundant free range. Settlement, as yet scarce, still clung to the edge of the prairie skirting the timber. There was still a large range for livestock in the center of the prairie, which could be occupied by all who chose to allow their cattle to graze upon it. Much of this common grazing-land still remained in Indiana, and more to the west. Many methods of stock-feeding prevailed; but in all the prairie regions range was the important factor. Markets were distant and hard to reach, and consequently the surplus cattle were of necessity disposed of at a low price.

In some prairie sections an extensive cattle-grazing business had developed, as described by a writer in Clinton County, Indiana, in 1853:¹⁴

“We have in this county a number of individuals who are engaged in buying cattle in small lots, and taking them to the prairies, where they collect large numbers to sell to drovers from Ohio and Pennsylvania. These cattle are kept on the prairies in Indiana and Illinois, in the following manner: The owner selects his location for grazing early in the spring, hires a man to herd them, and furnishes him with a pony, and prepares a lot called a ‘pound’ to put them in at night. As soon as the grass starts in the spring, he takes his cattle to the grazing ground, adjacent to some farmer on the edge of the prairie. He starts his cattle out in the prairie early in the morning by themselves. . . . He remains with them until night, when he brings them in and puts them in the pound for the night. The cost of keeping a lot of cattle in this manner, during the summer, is the herdsman’s wages and board, and their salt, one hundred dollars will keep four to five hundred head of cattle during the summer.”

WINTER FEEDING IN THE PRAIRIE REGION.

There were many practices of feeding in the prairie region in the winter. Some allowed their cattle to obtain winter sustenance by remaining in the pasture and digging the grass out of the snow. Wintering around the straw-stack was a common practice. Corn fodder and prairie hay provided other available food.¹⁵ Cattle, until about 3 years old, were allowed to run winter and summer exposed to all kinds of weather. It was common to feed them a little corn in the spring to give a good start on the pasture. H. L. Ellsworth wrote in 1845:¹⁶

“As for sheds, they are, as yet, unknown; no large feeder has them, to my knowledge, in Indiana. It is said that so much shed room is required, that it will not pay. Hence

¹² *Ibid.*, 4th Annual Report (1849), p. 52.

¹³ *Ibid.*, p. 99; 3d Annual Report (1848), p. 52.

¹⁴ U. S. Patent Office, Annual Report 1853, *Agriculture*, 6.

¹⁵ *Prairie Farmer*, III (1843), p. 108.

¹⁶ *Ibid.*, (1845), p. 386.

cattle are stuffed with corn, and remain in the open air during all kinds of weather. At present, farming is done upon a great and easy scale, and little, very little, attention is given to economy; and what is real economy in the present state of the fertile west, where land and stock are so plenty, is not quite certain."

BEGINNINGS OF CATTLE FATTENING IN THE CORN BELT.

A large part of the surplus cattle raised in the prairie region was sold to drovers and driven east to be fed by Ohio and eastern feeders. In the corn-growing region of Illinois, Indiana, and Missouri, however, after 1850, a considerable amount of stock was fattened. Cattle were bought up in the fall, driven to the interior corn-growing region, where corn was cheap, fed one or two winters, and then driven to market. By 1850, McLean County, Illinois, was developing as a western feeding center. A sample transaction of the business in this county reads as follows:¹⁷

"Messrs. Isaac Funk and P. Hapoter of McLean County, a few weeks since, sold 96 head of beef cattle to a New York drover, for \$4,383 or \$46.65 per head. They were started for New York the first of April."

PACKING OF WESTERN GRASS-FED BEEF IN CHICAGO.

By 1850, Chicago was developing as a western packing center for grass-fed beef. The *Chicago Tribune* in 1845 was "inclined to believe that Chicago was destined to become the greatest beef market in the United States, if not in the world." It was estimated that something like 200 to 250 cattle were slaughtered in the city daily. 22,000 cattle were packed in 1851, and 25,000 in 1852. By 1850, Chicago was rapidly coming to be the outlet for a large part of the grass-fed beef of northern Illinois, western Michigan, and parts of Iowa and Indiana.¹⁸

CATTLE IN WISCONSIN AND MICHIGAN.

In Wisconsin, but very little attention had been given to stock-raising. Its cattle were reported to be of very ordinary quality, brought originally from Illinois and Missouri.¹⁹ But the failure of the wheat crop in 1847 and following years, and consequent increased attention to general farming, caused farmers to give more thought to cattle feeding and dairying.²⁰ It seems to have been a general opinion that other systems of farming, particularly the raising of cattle and sheep, even if not more profitable than wheat-growing in ordinary seasons, were less speculative. Immigrants were bringing to the State cattle of a better quality,²¹ and by 1851 the number of cattle driven into the State from Illinois and Indiana was said to be decreasing each year because of the increased attention given to livestock-raising at home.²² In Michigan, before 1850, cattle had been marketed at home to immigrants and the lumber trade, but after that date a beginning was made in droving to Ohio and the eastern markets.²³

¹⁷ *Prairie Farmer*, X (1850), p. 166.

¹⁸ *Ibid.*, p. 382.

¹⁹ Wis. State Agric. Soc. *Transactions* (1851), p. 146.

²⁰ *Ibid.*, 216.

²¹ *Ibid.*, 146.

²² *Ibid.*, 201.

²³ U. S. Patent Office, *Annual Report* 1849, *Agriculture*, 183, 185.

EFFECT OF THE CALIFORNIA MIGRATION.

Emigration to California had a stimulating effect upon the cattle business west of the Mississippi. W. G. Edmumson wrote from Keokuk, Iowa, in 1852:²⁴

“Prior to the California emigration, stock cattle for feeding could be bought at one-half the prices asked in Ohio, but the outfit for the overland route being made almost exclusively along the upper Mississippi and her tributaries, tens of thousands of oxen, steers and cows have been bought up at nearly eastern prices, thus changing materially the market value of stock cattle for feeding.”

From Lee County, in the same State, in 1854, it was reported:²⁵ “Cattle, here, are a great article of trade, for home use, the East and California.” From Marion County:²⁶ “Cattle are found to be the most profitable stock raised here. They are sold mostly to California emigrants.” From Cooper County, Missouri, it was reported in 1849:²⁷

“Our stall-fed cattle are principally driven to St. Louis and slaughtered. But immense droves of 3, 4 and 5 year old steers, are annually bought up in this section and driven to Illinois, Indiana, Ohio and Virginia, there fattened, and then driven to Baltimore and other eastern markets.”

Three years later, however, a report in different terms came from the neighboring county of Boone.²⁸ “The California trade,” it observed, “has produced quite a revolution in the cattle trade of Missouri. They have advanced at least 200 per cent in price, and decreased in numbers in about the same proportion.” At the same time the cattle business was developing on the Pacific Coast. Calaveras County, California, reported in 1851:²⁹

“*Neat Cattle, Sheep, and Hogs* are raised on the large farms for the purpose of supplying the miners. They invariably feed upon wild grasses and acorns, no attention being paid to them other than is necessary to prevent their straying.”

On the Pacific Coast the improved English breeds crossed on the Spanish breeds were becoming common.

THE EASTERN CATTLE-FEEDING INDUSTRY.

Eastern Pennsylvania, New Jersey, northern Delaware, and eastern and southern New York had long been the centers of the eastern cattle-feeding industry. Formerly many eastern cattle-feeders had raised their own stock, but with the development of better markets in the East and the opening of cheap grazing lands in the West, and in remote sections of the Eastern States, they had come to depend largely on the drovers for their supply of cattle. Cattle from the grazing regions of the West, even from beyond the Mississippi River, were driven east across the Allegheny Mountains in the fall. Shorter drives were made from the grazing regions of northern and central Pennsylvania, and from northern New York and New England. Natural conditions, distance from market, and transportation facilities were important determining

²⁴ *Cultivator*, new series, IX (1852), p. 364.

²⁵ U. S. Patent Office, *Annual Report* 1854, *Agriculture*, 13.

²⁶ *Loc. cit.*

²⁷ *Cultivator*, new series, VI (1849), p. 302.

²⁸ U. S. Patent Office, *Annual Report* 1853, *Agriculture*, 11.

²⁹ *Ibid.*, 1851, p. 476.

factors in the type of livestock farming pursued. This movement of cattle was an important characteristic of the cattle industry of the period.

Western cattle arriving in the Eastern States in poor condition were sold to local farmers, who kept them over one winter, or one year and a winter, and then disposed of them on the market, usually during the winter or spring months, before the western fat cattle began to arrive. Stockmen who lived near the large cities had a decided advantage in being able to drive their cattle to market in a short time, thus taking advantage of temporary rises in price.

IN CHESTER COUNTY, PENNSYLVANIA.

In Chester County, Pennsylvania, a center of the eastern feeder industry, farmers were said to find the feeding of cattle one of the most profitable branches of their business.³⁰ It was usual for a Chester County farmer to fatten from 12 to 20 head of cattle annually. The cattle were secured largely from drovers who brought them in from Ohio, Virginia, Illinois, or from northern Pennsylvania.³¹ In an adjoining county in Delaware it was said³² that the cattle raised consisted of "a comparatively few from choice stock for the dairies, probably not exceeding one-eighth of the whole number in use." Somerset County, New Jersey, reported³³ that "fifty per cent of all our cattle are raised in the county; the other half are driven principally from New York State or Ohio." The feeding of cattle in Lancaster and adjoining counties was increasing, because with the decline of distilleries the grain formerly consumed by them was now converted into food for stock.³⁴ Throughout all the southern counties of Pennsylvania the feeding of cattle was a leading farm enterprise. In the northern and central counties, on the rougher land, many young cattle were raised. A writer from Susquehanna County, Pennsylvania, in 1851 reported:³⁵ "Large numbers of young cattle are raised, and sold to drovers, principally two and three years old, together with a fair amount of oxen; but no cattle are fattened for the city market."

IN NEW YORK, SOUTHERN AND EASTERN COUNTIES.

In New York, the southern and eastern counties carried on an extensive cattle-feeding industry, drawing their cattle from the West and from northern New York. The wheat region of western New York also furnished many lean cattle for the eastern feeder. From Wayne County, in the wheat region, in 1849, it was reported:³⁶ "About one-third are slaughtered at home; the remainder are driven to the Southern and Eastern counties to be fattened." The dairy section of New York, Oneida County, reported as follows:³⁷

"Many are fed in this portion of the county; but our farmers who turn their attention to this branch of business find that they can usually purchase steers three or four

³⁰ U. S. Patent Office, *Annual Report 1852, Agriculture*, 240.

³¹ *Ibid.*, 1853, p. 17.

³² *Ibid.*, 1849, p. 126.

³³ *Ibid.*, 1852, p. 170.

³⁴ *Ibid.*, 1845, p. 337.

³⁵ *Ibid.*, 1851, 260.

³⁶ *Ibid.*, 1849, p. 295.

³⁷ *Ibid.*, 1854, p. 18.

years of age at a cheaper price than they can afford to raise them. . . . They are generally obtained by picking them up singly about the country, or by purchasing from droves, which come annually from the West, usually from Ohio."

From Herkimer, a leading dairy county, in 1841, the report ran: ³⁸

"In the spring of the year, large droves of cows are brought here from the eastern, western, northern and southern counties, and Canada. They are milked through the summer, and in the fall the oldest and poorest are partially grass fattened, and driven to the eastern markets."

Throughout New York more or less cattle were fed, but the southern and eastern counties were the leading cattle-feeding sections.³⁹

IN NEW ENGLAND.

In New England, beef was generally produced in connection with the raising of steers for the yoke and cows for the dairy. In Maine, the lumbering industry furnished a large market for working oxen, but as the lumbering region receded,⁴⁰ increased attention was being given to farming and to the raising of neat cattle. "Five years ago," states the *Patent Office Report* for 1849,⁴¹ "large droves of working oxen, principally for lumbering, found a market in this county. Considerable numbers are now driven to Brighton (Mass.), from the central counties of the State, yielding fair profits." It was estimated that 14,000 cattle were received at Cambridge (Brighton Market), Massachusetts, from the western and central counties of Maine during the year 1850. From the cheap pastures of New Hampshire and Vermont large droves were annually driven South to be sold either at the Brighton Market, or to feeders or dairymen in the three southern New England States. In Massachusetts, Connecticut, and Rhode Island it was the custom of the farmer to buy a large part of his cattle from drovers coming down from the north.⁴² A writer from Worcester County, Massachusetts, in 1850 stated: ⁴³

"Fifty per cent of all our cattle are raised in the county, and the other half are driven in principally from Vermont, Maine, and New Hampshire. This foreign stock is purchased late in autumn, principally for the purpose of consuming the poor sorts of fodder, and to be grazed in summer, and used to supply our market with early beef."

New England beef was essentially fed on grass, supplemented, while finishing, with roots and a little grain. A writer in a Massachusetts report of 1849 gives the following directions for feeding beef cattle. It will be noted that corn was used to a less extent than in the West: ⁴⁴

"After the spring work is over, commence giving them the best pasturage during the summer, also the best fall feed until they come to the barn; then feed them with good hay and Indian meal, at first from one to two quarts per day, gradually increasing till six or eight quarts are given, until they are slaughtered, or about fifteen bushels of meal to each animal."

³⁸ N. Y. State Agric. Soc. *Transactions*, I (1841), p. 137.

³⁹ *Cultivator*, new series, VIII (1851), p. 235.

⁴⁰ U. S. Patent Office, *Annual Report 1850, Agriculture*, 114; (1854), p. 15.

⁴¹ *Ibid.*, 1849, 294.

⁴² *Ibid.*, 295.

⁴³ *Ibid.*, 1850, p. 272.

⁴⁴ *Mass., Transactions of the Agricultural Societies 1849*, p. 88.

DESCRIPTION OF THE BRIGHTON MARKET.

The Connecticut River Valley was a center of the cattle-feeding industry in New England.⁴⁵ At Brighton, the great New England cattle market, it was said in 1844 that \$2,000,000 worth of hogs, cattle and sheep were sold annually.⁴⁶ The following account of the Brighton Cattle Market may help in developing a picture of New England agriculture in 1840:⁴⁷

"Thursday of every week, which by common consent and custom is the market day, changes the generally quiet village of Brighton into a scene of bustle and excitement. At early morning the cattle, sheep, etc., are hurried in and soon the morning train from Boston, omnibuses, carriages and other 'vehicular mediums' bring in a throng of drovers, buyers, speculators and spectators; so that, by 10 o'clock, there are generally gathered as many as two or three hundred vehicles in the area fronting the Cattle Fair Hotel. The proprietors thereof throng the spacious bar-room for the purpose of warming themselves in winter, and in summer 'cooling off'—the process for effecting both results being precisely the same. The portico of the hotel is occupied by hawkers and peddlers, who sell clothing, jewelry, soap, watches, knives, razors, etc., (to say nothing of their customers), at astonishingly low rates. An 'English hunting lever eighteen carots fine,' is frequently sold for five or six dollars, and, of course, is a genuine article. In the region round about, 'Mammoth Steer,' 'Living Skeletons,' 'Snakes,' etc., are on exhibition at reasonable prices.

"One of the outside features of the market is the horse auction. A Brighton horse has become a proverb. Here are gathered all the old, wornout, broken-down, and used-up omnibus, cart and livery stable steeds, and these are knocked down (if they don't tumble down,) at sums varying from five to forty dollars. These sales are productive of a deal of merriment and the mettle, speed and fine points of the animals are exhibited, (the 'points' perhaps being sufficiently prominent already).

"All this time, the butchers and the drovers are busily engaged in their traffic. The fattest and best of the cattle in the pens find ready sale, and long before all the drovers are in, select lots begin to be driven from the grounds. Men and boys hurry up and down the lanes and through the pens, each armed with a stock which is a sort of a shillelah, shouting to the half-crazed cattle, and with screams and blows directing them where they should go. Occasionally a drove of cows and calves come along, the latter muzzled, and the former looing and bellowing in chorus to the shouts of their drivers. Farmers from the neighboring towns are selecting 'stores' from the large number of that class in the pens, and dairymen carefully examining the 'milky-mothers' that are so anxiously seeking their young from the midst of their companions. Working oxen are driven in by farmers from the vicinity, who sell, only after much banter, to buy again when prices are low. In the midst of these, dogs, and goats and mules are offered for sale, and nearby, are the hog pens, containing, at this season, only stores, which are sold singly and in pairs to small farmers, mechanics and others who think they can afford to 'keep a pig.'

"The forenoon is busy enough. At high noon the huge bell of the hotel announces dinner, and for a brief period there is a breathing spell for man and beast. After dinner, business again resumes its sway. The voice of the hawker becomes hoarse, but it is by no means silenced. Drovers who have not made many sales get nervous, and pens are cleared out without much regard to profit on the part of the seller. The butchers begin to turn their faces homewards, and the drovers, generally with well filled wallets, start for Boston. A few, not liking the prices, and hoping for 'better times,' make arrangements to turn out their cattle to pasture, and hold over to another week. By five o'clock the business of the day is over, and Brighton subsides once more into a quiet, matter-of-fact Massachusetts village, till another Thursday brings round another market day."

⁴⁵ U. S. Patent Office, *Annual Report 1849, Agriculture*, 291, 294; *Country Gentleman*, XVII (1861), p. 410.

⁴⁶ U. S. Patent Office, *Annual Report (1844)*, p. 158.

⁴⁷ Hawthorne, *American Note Books*, in *Collected Works* (11th ed., 1887), IX, p. 248. Reprinted in *Country Gentleman*, XVI (1860), p. 100.

WESTWARD SHIFT OF CATTLE FEEDING.

By 1860 the frontier of the cattle feeding industry had moved west. The railroads now extended from the Atlantic beyond the Mississippi River. The remote corn-growing regions of central Illinois and eastern Iowa had become cattle-feeding centers. Missouri and Texas were now the chief sources of western feeder cattle, for Texas had advanced from the rank of eighteenth in number of cattle, in 1850, to first in 1860. California, which in 1850 was twenty-second, had in 1860 become sixth. (See fig. 96.)

Formerly western cattle could be put on the eastern markets only during the spring, summer, and fall months. The long drive deprived the western

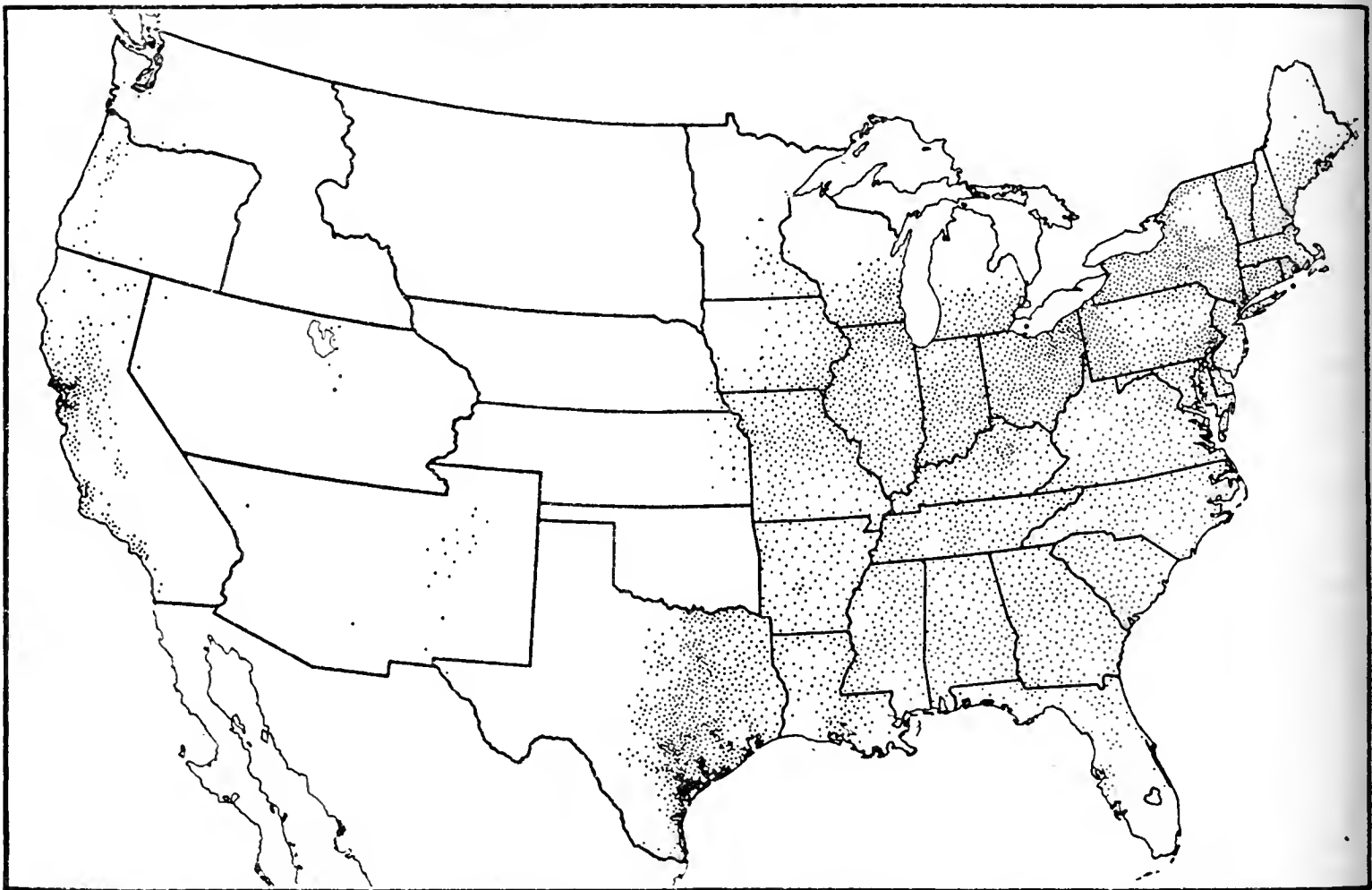


FIG. 96.—All cattle, 1860. Each dot represents 5,000 head.

During the fifties the number of cattle in the West rapidly increased as the frontier was pushed farther west. Cattle grazing had rapidly developed on the Pacific coast. Before 1860 cattle feeding accompanied general farming in its extension westward through the Ohio and Mississippi valleys.

grazier of the opportunity of taking advantage of temporary rises in prices. The Eastern feeder profited by such opportunities, because of his nearness to market. After 1850, however, western cattle were shipped by railroad to the East at all seasons of the year. The eastern feeder thus lost one of his chief advantages. In 1840, Baltimore received from the West over the Baltimore and Ohio Railroad 432 tons of livestock; in 1850, 14,863 tons, and in 1859, 25,184 tons.⁴⁸ In 1852 Philadelphia received from the West over the Pennsylvania Railroad, 1,562 tons of livestock. In 1859, there were received over the same

⁴⁸ B. & O. Railroad Co., *33d Annual Report* (1859), p. 81.

road, private cars included, 49,418 tons, of which 32,552 tons were forwarded from Pittsburg.⁴⁹

EFFECT OF RAILROAD TRANSPORTATION ON NEW ENGLAND CATTLE FEEDING.

By 1860, cattle-feeding in the southern New England States had reached its height and in many regions had begun to decline. The extension of railroads was a leading cause. James L. Grinnel, in 1862, wrote as follows:⁵⁰

"It was admitted all round that owing to the great facilities for bringing cattle from the far west at a low price, and in great quantities, at all times of the year, cattle which had roamed on the prairies, costing the government price, \$1.25 per acre, and fattened upon corn worth ten cents per bushel—or distillery slops made at the same rate—we here could not compete on pastures worth \$30 per acre, and corn worth 75 cents."

The Patent Office reported in 1861 that the facilities for bringing in cattle at all times by railroad from the West and other States was so great that the business of feeding in the East was rapidly declining.⁵¹ The extension of railroads into former remote cattle-grazing regions and the increasing price of store cattle, after about 1847, made it more difficult for the New England farmer to buy lean cattle. Says a Connecticut report of 1856:⁵²

"Neat cattle have decreased enormously in many of the counties since 1850. Ten years ago our drovers could get a drove of store cattle, by going out fifty or one hundred miles west of the Hudson or to Western Massachusetts, Vermont, or Northern Pennsylvania. Now they go further and often return without them."

The development of a market for dairy produce, hay, and other crops was furnishing increased opportunities for the New England farmer to change the method of disposing of his field produce. Dairy cows and working oxen, however, still furnished a large supply of store cattle to be fattened in the fall.

WESTWARD EXTENSION OF RAILROADS ENDS CATTLE FATTENING IN THE SCIOTO VALLEY.

In Ohio, the opening of through railroads resulted in many changes. The driving of fat cattle from the regions of the Scioto to the eastern market, which had reached its height during the period 1840 to 1850, had almost ceased by 1860. Cattle could now be sent east by railroad from the grazing lands of Illinois without stopping to be fed in Ohio. Of the cattle received on the New York market in 1858, Illinois was reported to have sent 53,500, Ohio 37,600, Indiana 11,100, Kentucky 9,400, Iowa 2,700, Michigan 1,700. And in addition, large numbers of western cattle were "carried into New York State where they are grazed a few weeks and then entered as New York cattle."⁵³

Now that the long, hard drive across the Alleghenies could be avoided, it was no longer profitable to fatten cattle to such a degree as formerly. Other

⁴⁹ Penn. Railroad Co., *6th Annual Report* (1853), p. 64; *13th Annual Report* (1860), p. 103.

⁵⁰ *Country Gentleman*, XIX (1862), p. 61.

⁵¹ U. S. Patent Office, *Annual Report 1861, Agriculture*, 258.

⁵² Conn. State Agric. Soc. *Transactions 1856*, p. 47.

⁵³ Chicago Board of Trade, *1st Annual Report* (1858), p. 26.

markets were also opened for Ohio corn. Grass was now relied upon to a greater extent to prepare the cattle for market. Formerly from 50 to 75 bushels had been fed to a fattening steer the winter before being sent to market; now 25 to 40 bushels was a more common amount. There was a tendency to fatten cattle at an earlier age and for a shorter period. In 1858 there were shipped east from Cleveland 124,046 head of cattle, of which the New York market took 53,652 head and the remainder went to Albany, Brighton, or to New York State as feeders.⁵⁴

WESTWARD MOVEMENT OF CATTLE FEEDING AND GRAZING.

The construction of railroads, which tended to diminish the feeding of cattle in Ohio, contributed largely to the increase in this branch of farming in Illinois and other Western States. The cattle-supply region had been pushed farther west. Texas, Missouri, and Iowa were now the great cattle-grazing States. Central Illinois and eastern Iowa were developing as western feeding centers. Free grazing lands to the South and West, railroad connection with eastern markets, the temperate climate, the adaptability of the rich prairie grasses for grazing, and the ease with which corn could be produced were establishing this region as a finishing-ground for the western packing industry.

In 1859, eight Chicago firms packed a total of 51,606 cattle.⁵⁵ The business of a leading feeder of McLean county, Illinois, was thus described in 1862:⁵⁶

“ [He] usually winters over from seven hundred to one thousand head of cattle, and stall-feeds for early spring market from three hundred to five hundred head. He markets his stall-fed cattle about the 1st of April. He buys cattle all the time, whenever he can do so profitably. Those he sells in the summer and fall are generally three years old. . . . He prefers to buy cattle (steers) the spring they are two years old. They usually cost them, if good ones, from \$18 to \$25 per head. These are kept one summer, one winter, and the half the next summer, when they are in condition to market, and will average from \$45 to \$52 per head.”

BEGINNING OF CATTLE DRIVING FROM TEXAS.

In 1854, Texas cattle in large numbers were driven north to be fed in Illinois. There is a report of a drive of 1,500 head to Missouri in 1842, but the earliest authenticated record of a business venture of the kind found by the writer was that of Edward Piper, of Decatur, Illinois, who in 1846 drove 1,000 head of Texas cattle to Ohio, where he fed and sold them. From 1846 to 1861 the drives increased. In 1850, drives began from Texas to California. In 1855, 154 head of Texas cattle appeared in New York; they were said to have been brought by Mr. Rankin, of Illinois, who, after feeding them, shipped them to New York by railroad.⁵⁷ By 1860, Texas cattle were driven directly to the packing market of Chicago. The cattle went through Missouri and Iowa to the Mississippi River, grazing by the way, and from there were transported by rail to Chicago.⁵⁸ The first drive of Texas cattle through to

⁵⁴ *Country Gentleman*, XIX (1862), p. 12.

⁵⁵ Chicago Board of Trade, *Annual Report* (1859), p. 59.

⁵⁶ U. S. Patent Office, *Annual Report* 1862, *Agriculture*, 333.

⁵⁷ *Prairie Farmer*, XV (1855), p. 248.

⁵⁸ U. S. Patent Office, *Annual Report* 1862, *Agriculture*, 330.

Chicago is said to have been made in 1856.⁵⁹ But by far the larger number of Texas cattle which went north were fed in the corn or grazing districts of Illinois or Iowa before being sent to market.⁶⁰

TYPES OF NATIVE CATTLE FOUND IN KENTUCKY AND OHIO.

There was great diversity in the prevailing type of cattle in 1840. A Kentucky writer described the native cattle of that State in 1840 as a small, bony, black-haired, blue-nosed animal; which, "nevertheless, from long breeding for its milk alone, had come to possess a soft and richly colored skin and fine hair that some of its betters might envy." Adam Beatty wrote in 1844 that the improved breeds of Kentucky were sent to market when 3 years old, but the common stock and half-blood had to be kept 6 to 12 months longer.⁶¹ The native cattle of Ohio in 1841 were described as "ring streaked, speckled and gray, with black, dun, yellow and bay, their quarters consisting in a big wiry tail, and a sharp crowning rump that will take on fat with the same avidity as Pharaoh's lean kine did of old."⁶² Their weight at 4 years old was commonly from 500 to 700 pounds. By 1840, however, a spirit of improvement was abroad, and no subject attracted more attention in the agricultural journals of the time than the improvement of breeds of cattle.

IMPORTATION OF IMPROVED ENGLISH CATTLE.

The fertile bluegrass region of Kentucky had long been famous throughout the land for its fine stock of Shorthorn cattle. Another early center of improved cattle-breeding was the rich cattle-feeding region of the Miami and Scioto Valleys in south central Ohio. Desiring a larger and more economical animal, and inspired by the work of breeders, in Kentucky and elsewhere, several of the leading cattle feeders and citizens of Ross and two or three adjoining counties in Ohio in 1833 formed an association "for the purpose of promoting the interests of agriculture, and of introducing an improved breed of cattle into this State."⁶³ It was called the "Ohio Company for Importing English Cattle." The company appointed Felix Renick, a prominent cattle man, to proceed to England and "to select and purchase, with less regard to cost than to their intrinsic and prospective value, a sufficient number of cows and bulls requisite fairly to introduce their breed into this neighborhood. This mission was highly successful."⁶⁴

After inspecting the best herds of England and Scotland, Mr. Renick returned to Ohio bringing "some score of animals" of the Shorthorn breed. During the following two years, other importations were made bringing the total number of cattle imported by the Ohio company up to 61 head. In 1836-37 the object of the society having been accomplished, the cattle which it then possessed were disposed of by public auction. Two bulls sold for

⁵⁹ U. S. Census of 1880, vol. III, *Agriculture, Live Stock Supplement*, II.

⁶⁰ U. S. Patent Office, *Annual Report*, 1862, *Agriculture*, 329.

⁶¹ Beatty, *Essays on Practical Agriculture*, p. 269.

⁶² *Cultivator*, VIII (1841), p. 67.

⁶³ U. S. Patent Office, *Annual Report* 1851, *Agriculture*, 98.

⁶⁴ *Ibid.*, 1849, p. 298.

\$2,500 each, the cow Teeswater and her calf for \$2,225.⁶⁵ Importations in increasing numbers succeeded the operations of the Ohio company. Mr. John Powell, of Powellton, Pennsylvania, was one of the large importers of improved cattle. Up to 1840, however, improved cattle were largely confined to the rich and the well-to-do farmers; it was not until about 1850 that their introduction became at all general.

In New England the farmers were nearly unanimous in their preference for the common native stock, in which the Devon blood predominated. The native cows were said to be good milking cattle and the steers made good oxen. Devon, Shorthorn, Hereford, Ayrshire, and Jersey cattle had been introduced and crossed on the native stock. In New York and Pennsylvania improved breeds had been introduced, but their influence up to 1840 was comparatively local. In awarding the premium at the New York State Fair in 1841, the committee regretted "that a matter so important as the improvement of our native cows, does not excite more attention. . . . It is a matter yet at issue whether such crosses will not make the most desirable animal for the common farmer." Many farmers were prejudiced against English cattle because of the earlier importation of "unimproved Durham" or "Yorkshire" cattle commonly called "Hog-hams" or "Pumpkin rumps"—names said to have been suggested by the peculiar conformation of the hind quarters. These cattle had proved unsuccessful, and were deemed inferior to the native breeds.⁶⁶

By 1850 "a commendable zeal" was said to be evident among the New England farmers for the improvement of livestock.⁶⁷ A difficulty with the Shorthorns was said to be found in the expensiveness of their keep, and the care which they required.⁶⁸ In Maine, Herefords were regarded as good beef cattle, as well as good oxen. The Massachusetts Agricultural Society went to great expense to introduce the Ayrshire breed of cows.⁶⁹ The Devon, however, was still the favorite with the New England farmer, who sought a type of cattle that would rear heifers for the dairy, steers for the yoke, and both ultimately for the shambles. A New Hampshire man writes:⁷⁰

"As working cattle they [Devons] are unsurpassed, and from their uniformity of color and build, are easily matched. They are active, docile, and tractable, as well as tough and hardy, and will perform much hard labor without losing flesh."

Another writes: "The Devons readily appropriate the sour grasses to their support. They do well upon meadow hay, and grow finely in our old, sour pastures."⁷¹ In the valley of the Merrimac, the pure Devon was said to be more generally kept than any other breed of blooded stock. They were preferred by many on account of their color, a bright red.⁷²

Many New England farmers insisted that the native stock, the cows of which were commonly regarded as good milking cattle, was as good as any. In the East, at least during this period, better feed, shelter, and care of the native stock was the greatest source of improvement in cattle. Early maturity

⁶⁵ *Ibid.*, 1851, *Agriculture*, 101, 102.

⁶⁶ N. Y. State Agric. Soc. *Transactions*, I (1841), pp. 51, 93.

⁶⁷ U. S. Patent Office, *Annual Report 1849, Agriculture*, 295.

⁶⁸ *Agriculture of Massachusetts, 2d Annual Report (1838)*, p. 142.

⁶⁹ *Ibid.*, 55.

⁷⁰ U. S. Patent Office, *Annual Report 1849, Agriculture*, 295; 1854, p. 16.

⁷¹ *Ibid.*, 1854, *Agriculture*, 17.

⁷² *Ibid.*, 1849, *Agriculture*, p. 294.

and a tendency to fatten were qualities wanted by the western farmer, and consequently there the Shorthorn soon came into favor. In the East, however, dairying was of greater importance, and more attention was given to the dairy breeds and the improving of the native cattle. Although the Jersey was a favored breed, there were less than 75 purebred Jerseys in Massachusetts in 1853.⁷³

In the fertile pastures and milder climate of the West, Shorthorn stock had found more favor than in the East. In 1849, the average weight of the fattened cattle driven from the region of the Scioto Valley was not less than 100 pounds per head above that which had prevailed 20 years before. West of Ohio few of the improved breeds of cattle had been introduced up to 1860. A drove of 1,000 head of cattle slaughtered at Chicago in 1850, purchased from Isaac Funk, of McLean County, "averaged over 650 lbs. each; and 200 killed in one day averaged 736 pounds—only twenty of them being over three years old."⁷⁴ In 1854 Funk sold 1,400 head which averaged 700 pounds each. This was said to be a high figure for so large a number.⁷⁵ 600 pounds was considered a good weight for a good western steer at 3 years of age. Drovers from this region were said to be mingled with the improved breeds and their crosses.⁷⁶

After 1850 the improvement of cattle progressed at a more rapid rate. Adaptability for a long drive to market was no longer a requirement in regions having railroad facilities. Of the 140,534 cattle received at Chicago in 1858, only 21,000 were driven in.⁷⁷ Agricultural societies and agricultural fairs were a large stimulus to the movement. The practice of buying cattle from drovers was a great hindrance.

OXEN VS. HORSES AS DRAFT ANIMALS.

The time-honored discussion of the relative merits of oxen and horses was at its height during the period 1840 to 1860. Ploughing and hauling contests between cattle and horses were leading attractions at the agricultural fairs, and much was written of the relative merits and costs of each as draft animals in the agricultural periodicals.

As the census of 1840 did not report oxen separately, there is no statistical account of their increase or decrease in the years 1840 to 1850. During the following decade, however, oxen appear to have been losing in favor in the East. In the country as a whole their number increased from 1,701,000 to 2,255,000, but in every Northern State east of Indiana, except Connecticut and Maryland, oxen decreased. In New England, where the ox was in most common use, the proportion of oxen to horses in 1850 was about 3 to 2; in 1860 they were nearly equal in number; oxen had decreased in number, while horses had increased. West of the Ohio the proportion of oxen to horses was much less. The number of western oxen was increasing, but not so rapidly as the number of horses. Oxen were particularly numerous in Michigan and Wisconsin, where much lumbering was carried on. In Michigan in 1850 oxen

⁷³ U. S. Commissioner of Agric., *Annual Report* 1872, p. 297.

⁷⁴ *Prairie Farmer*, X (1850), p. 382.

⁷⁵ *Ibid.*, XV (1855), p. 36.

⁷⁶ *Ibid.*, IX (1849), p. 367.

⁷⁷ Chicago Board of Trade, *1st Annual Report* (1858), p. 26.

had nearly equaled horses; in Wisconsin oxen were the more numerous. In 1860 the number of horses far exceeded the number of oxen in both States. Farmers in the prairie region often preferred oxen for ploughing, but horses were increasing in number much faster than oxen.

The oxen of New England had long been celebrated for their fine appearance and excellent working qualities. The red Devon was the breed preferred. Great care was bestowed upon their raising and training. Men made a profession of breaking steers. The attention of strangers in New England was often "attracted by the noble teams of oxen which are so frequently met with in the city of Boston and vicinity. . . . Their spirited and lively air, and

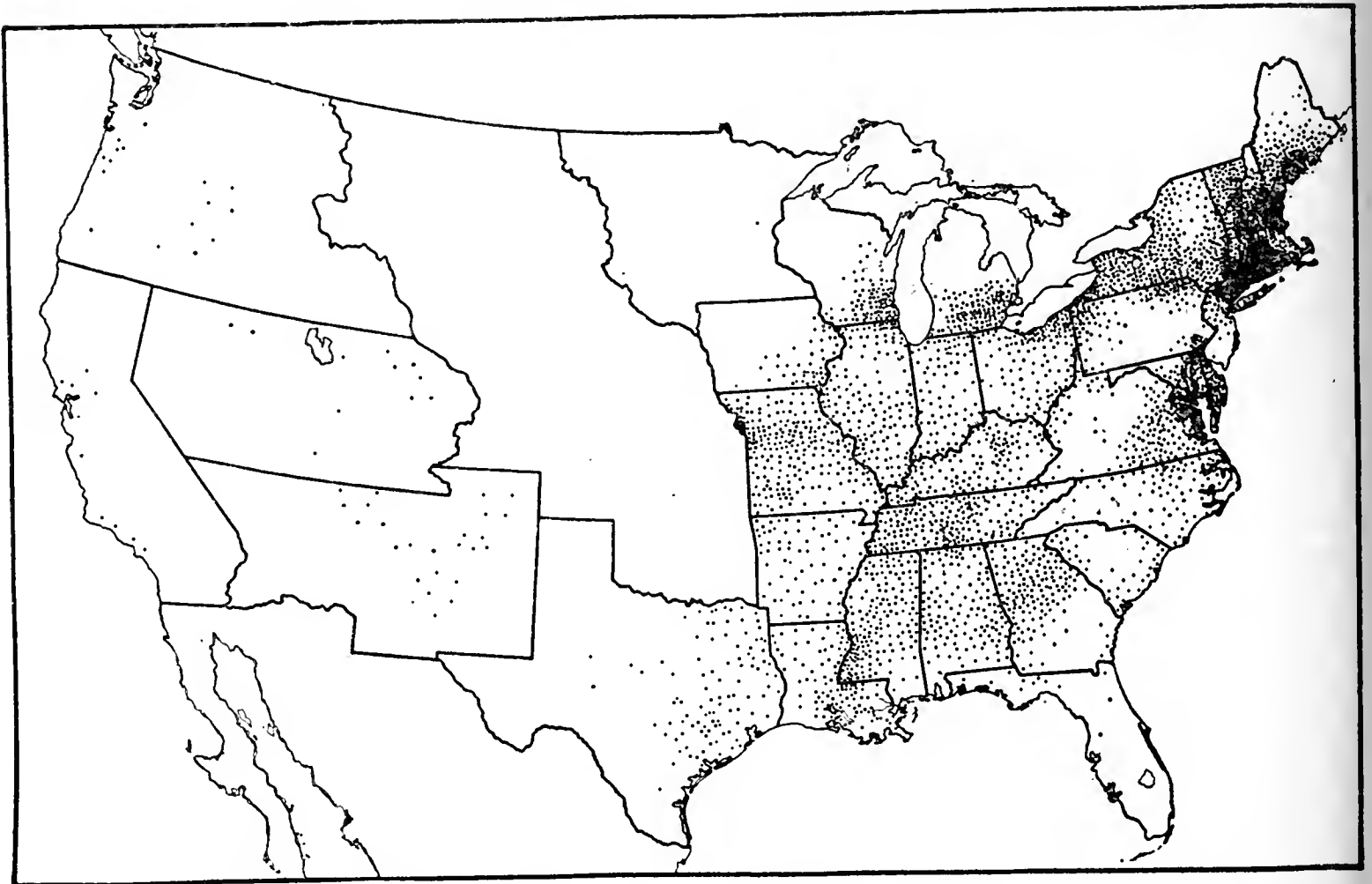


FIG. 97.—Working oxen, 1850. Each dot represents 500 head.

the brisk and springy walk with which they moved along their heavy loads," was a matter of remark.⁷⁸ In Rhode Island in 1849 most of the farm teaming was performed by oxen, and the manufacturing teaming by horses. In the north lumbering was carried on largely with oxen.

HORSES REPLACING OXEN IN THE EAST; REASONS FOR THE CHANGE.

The horse was replacing the ox for farm work. The reasons ascribed for this change were many. For working in the woods, or for breaking up a tough new sod, or for ploughing fields filled with rocks and stumps, the ox was quite generally preferred to the more nervous and energetic horse. The price and the cost of keeping an ox was less than that for a horse. The price of a yoke was less than that of a harness. The ox would continue to

⁷⁸ *Cultivator*, new series, IV (1847), p. 20.

grow for several years and could be then disposed of for beef, thus serving the two-fold purpose of working and providing beef. The horse, on the other hand, was more tractable, and worked at a more rapid pace. The growth of cities in the East was causing an increased demand for horses. With the building of roads and the movement towards a more commercial agriculture, more and more of the produce was sent to market, and for work of this kind the horse was regarded as superior to the ox. Farming in the East was becoming separated from lumbering. Fields were being cleared of rocks and stumps, and the sod was more frequently broken than formerly. Cattle were now sent to market at an earlier age, so that an increasing portion of the cost of raising the ox had to be paid for by the work accomplished.⁷⁹ Still another reason for the change was the increased use of improved farm machinery. When used with the cultivator, the horse rake, and other light machinery, the horse proved capable of much more work than the ox.⁸⁰ For the mowing machine and reaper the horse was considered indispensable.⁸¹ Moreover, by 1860 things were moving at a "faster pace," the wages of labor were higher, time was more valuable, the more rapidly moving horse enabled the laborer to accomplish more work in a day.

⁷⁹ Mass. Board of Agriculture, *8th Annual Report* (1860). *Report of Secretary and Committees*, 274; *Abstract of Returns of Agricultural Societies*, 125.

⁸⁰ *Ibid.*, *Abstract of Returns of Agricultural Societies*, 126.

⁸¹ U. S. Patent Office, *Annual Report 1863, Agriculture*, 259.

CHAPTER XXXIV.—SHEEP.

The sheep-raising regions of the North in 1840 were New England, New York, Ohio, western Pennsylvania, and the bluegrass region of Kentucky. Of these, Vermont, the Berkshire region of western Massachusetts and Connecticut, and the State of New York were outstanding. Vermont raised more sheep in proportion to its population than any other State in the Union. Indiana reported 676,000 sheep. In Illinois and Missouri there were 396,000 and 348,000 respectively. Sheep-raising in these sparsely settled States was usually carried on in a small way to supply the domestic needs for mutton and wool. Few sheep were as yet to be found in Michigan, Wisconsin, or Iowa. (See fig. 98.) The census of 1840 reported a total wool production of

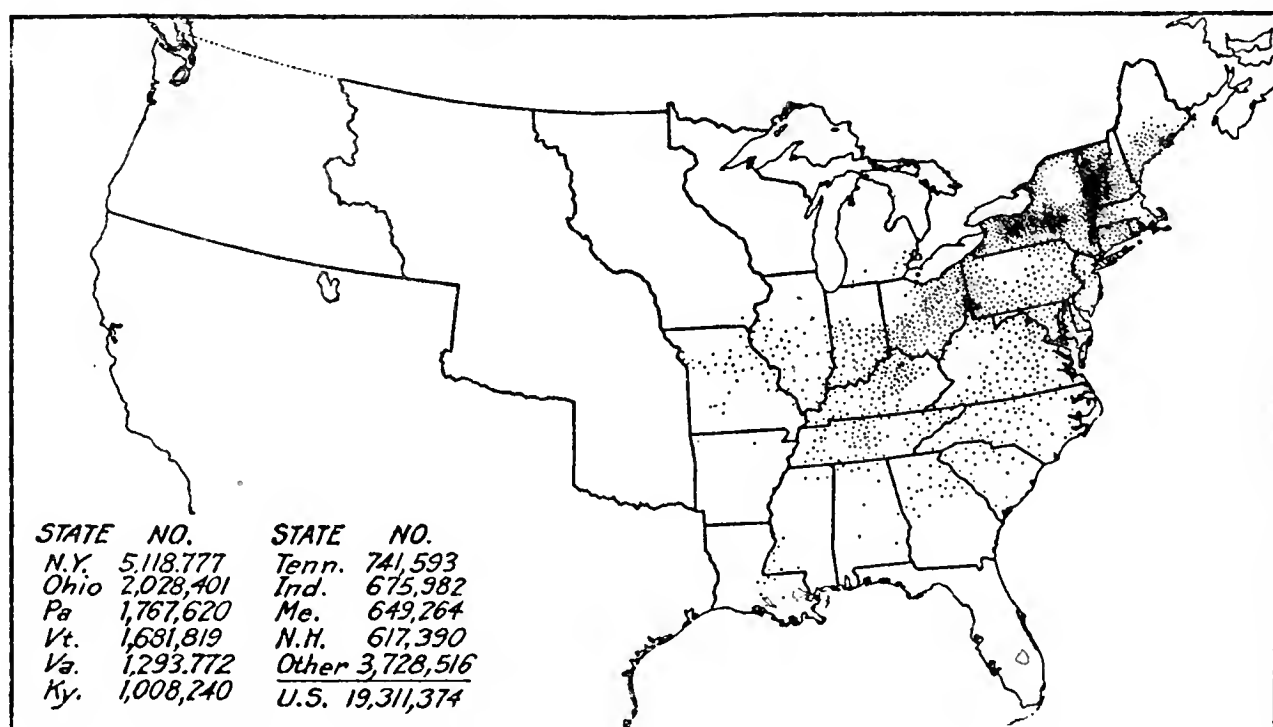


FIG. 98.—Sheep and lambs, 1840. Each dot represents 10,000 head.

The sheep industry had become well established in New England and New York before 1840. After 1830 it had rapidly developed in Ohio and western Pennsylvania.

35,800,000 pounds from 19,300,000 sheep, an average weight of fleece of 1.8 pounds. The *Cultivator* asserted that the average was much too low, and believed that the yield certainly must have been $2\frac{1}{2}$ or 3 pounds per fleece,¹ a figure which was corroborated by many other contemporary estimates.

During the thirties, sheep husbandry had been pursued with great enthusiasm in the Eastern States. In New England, attracted by the high prices for fine wool, small farmers had increased the number of their sheep, large flocks had been established, and dairying and grain-raising had in places given way to the sheep industry. It was asserted that in one of the best towns

¹ *Cultivator*, IX (1842), p. 99.

of Berkshire County, western Massachusetts, about 1837, some families were actually without bread for a time, because farmers had turned all their land into sheep pasture. There were—

“persons for example who worked for the large wool farmers. They asked for money for their labor; but money was not to be had because the clipping of wool, owing to the derangements of business, had not been sold. They asked to receive their pay in grain; but the wool farmer had abandoned all cultivation for the sheep husbandry. They asked for their pay in pork, but the farmers who raised no grain could raise no pork.”²

Throughout the sheep-raising districts of New York and New England, flocks of from 300 to 1,000 sheep were commonly grazed.³ After 1837 the price of fine wool declined (see fig. 29, p. 219). By 1840 the New York and New England wool-growers were decreasing the size of their flocks and turning their attention to dairying.⁴

WESTWARD MOVEMENT OF WOOL GROWING, 1850 TO 1860.

By 1850 the center of the wool-growing industry had moved westward. (See fig. 99.) Ohio now led in sheep, the number in that State having nearly

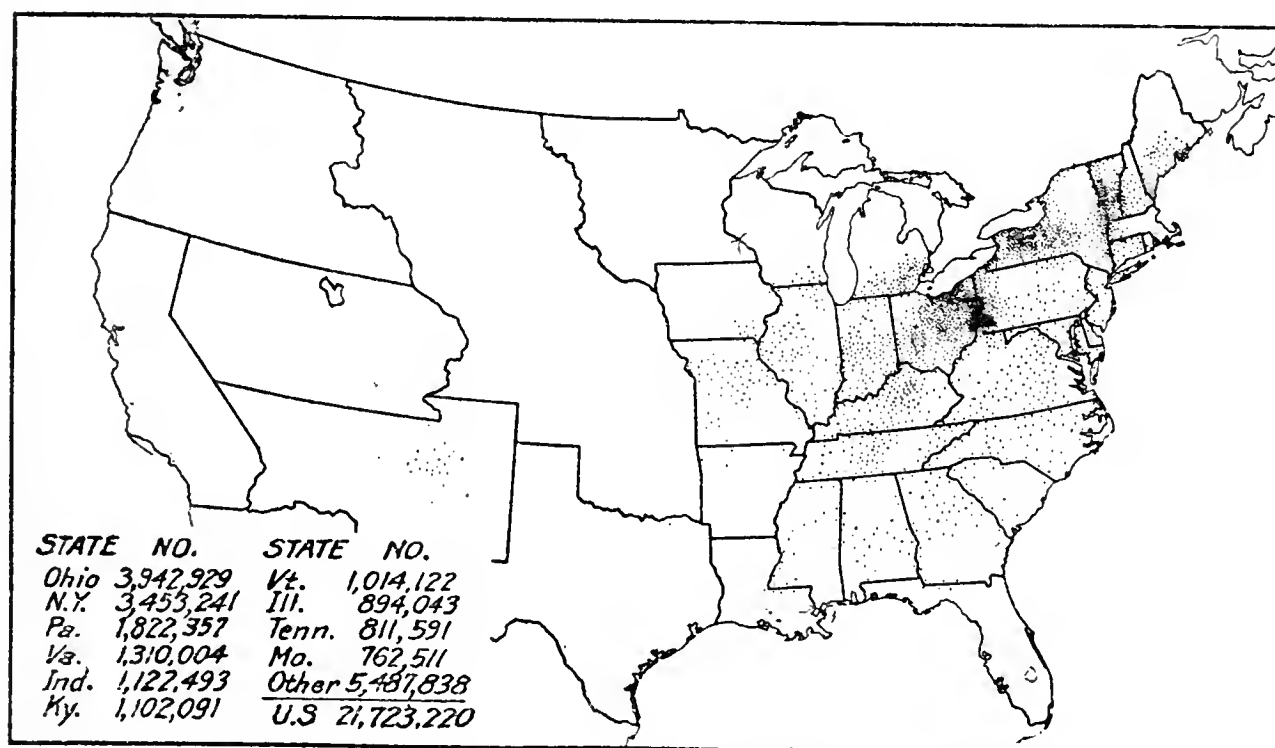


FIG. 99.—Sheep and lambs, 1850. Each dot represents 10,000 head.

In the old sheep regions of New England and eastern New York the number of sheep rapidly declined during the forties. In New York the number decreased nearly one-third. In Ohio sheep nearly doubled. Southern Michigan was developing as a sheep region.

doubled since 1840. The census of 1840 had shown that in the Northern States east of Ohio there were more than twice as many sheep as in the region west of Ohio, but by 1850 sheep were more numerous in the western region. Ohio, Michigan, Indiana, Illinois, Missouri, and Iowa showed the greatest increase during the forties. Every State in the East, except Pennsyl-

² *Agriculture of Massachusetts, 2d Report* (1838), p. 136.

³ *N. Y. State Agric. Soc. Transactions, I* (1841), p. 143.

⁴ *Agriculture of Massachusetts, 2d Report* (1838), p. 45.

vania, showed a large decrease; every State in the West showed an increase in number of sheep (see figs. 98, 99).

FURTHER DECLINE OF WOOL GROWING IN NEW ENGLAND AND NEW YORK—CAUSES.

In the region comprising New York and the New England States the number of sheep declined over 63 per cent between 1850 and 1860. The reasons commonly assigned by the writers of the time were the low price of wool and the high price of dairy products. Among eastern wool-growers it was a much discussed question, "How much does it cost to grow a pound of wool?" From Windsor County, Vermont, in 1848 a correspondent observed:⁵

"The productions of the dairy are increasing in the same ratio that that of wool is decreasing, in consequence of the low prices of the latter, and the enhanced value of the former. . . ."

Another wrote:⁶

"The number of sheep in our State has been diminishing for several years. The low and fluctuating price of wool has contributed to bring about this result. Under the impression that the great West would produce wool to such an extent as would depress the price so low that competition would be impossible, many of our farmers prematurely disposed of their flocks; . . ."

In Windham County, Vermont, it was said⁷ to cost

"from \$1.25 to \$1.50 to keep sheep by the year. The average of wool per head will not much exceed 3 pounds. . . . While wool sells for 40 cents per pound, our flocks must produce an average yield of 3 pounds and upwards, or wool growing will not yield a profit."

From Claremont, New Hampshire, in 1849 came the following report:⁸

"This branch of husbandry rather flags in this section. Many of our farmers are discouraged, and are getting rid of their sheep as best they can, selling them for their pelts, or killing them for mutton. The cause of this is that cattle-raising is found much more profitable than sheep raising. Hence farmers are selling off their flocks of sheep, and are going more extensively into the breeding of cattle for the Brighton Market."

From Litchfield County, Connecticut:⁹

"The raising of fine-wooled sheep is generally abandoned in this vicinity, and coarse sheep, for mutton, have been substituted, which are considered the most profitable stock of the farmer."

In Franklin County, Vermont, in 1848, sheep were said to have diminished 15 to 20 per cent since shearing.¹⁰ The *Cultivator* of 1849 estimated that within the past 2 years 1,000,000 of sheep had been killed in Vermont for their pelts and tallow.¹¹ This was probably an exaggeration, but it shows the trend of affairs.

⁵ U. S. Patent Office, *Annual Report* 1848, *Agriculture*, 368.

⁶ *Ibid.*, 1854, p. 28.

⁷ *Ibid.*, 1851, p. 157.

⁸ *Ibid.*, 1849, p. 242.

⁹ *Ibid.*, 1851, p. 179.

¹⁰ *Ibid.*, 1848, p. 367.

¹¹ *Cultivator*, new series, VI (1849), p. 157.

TABLE 51.—*Sheep: Number in the United States.*

[Source: U. S. Censuses of 1840, 1850 and 1860.]

Geographic division and State.	1840.			1850.			1860.		
	Total (thousands).	Per 1000 population.	Per cent of U. S. total.	Total (thousands).	Per 1000 population.	Per cent of U. S. total.	Total (thousands).	Per 1000 population.	Per cent of U. S. total.
United States	19 311	1,131	100.0	21,723	937	100.0	22,471	715	100.0
Geographic Division:									
New England	3,820	1,709	19.8	2,258	828	10.4	1,780	568	7.9
Middle Atlantic	7,106	1,570	36.8	5,436	922	25.0	4,385	588	19.5
East North Central.	3,203	1,095	16.6	6,831	1,510	31.4	6,912	998	30.8
West North Central	363	851	1.9	913	1,037	4.2	1,230	567	5.5
Mountain .....	.....	.....	.....	381	5,218	1.8	868	4,961	3.9
Pacific .....	.....	.....	.....	33	311	.2	1,184	2,667	5.3
New England:									
Maine	649	1,294	3.4	452	774	2.1	452	720	2.0
New Hampshire ...	617	2,170	3.2	385	1,210	1.8	311	952	1.4
Vermont	1,682	5,761	8.7	1,014	3,228	4.7	752	2,387	3.4
Massachusetts	378	513	1.9	189	190	.8	115	93	.5
Rhode Island	90	828	.5	44	300	.2	33	187	.1
Connecticut	404	1,302	2.1	174	470	.8	117	254	.5
Middle Atlantic:									
New York	5,119	2,107	26.5	3,453	1,115	15.9	2,618	675	11.6
New Jersey	219	587	1.1	161	328	.7	135	201	.6
Pennsylvania	1,768	1,025	9.2	1,822	788	8.4	1,632	561	7.3
East North Central:									
Ohio	2,028	1,335	10.5	3,943	1,991	18.2	3,547	1,516	15.8
Indiana	676	986	3.5	1,123	1,136	5.1	991	734	4.4
Illinois	396	831	2.1	894	1,050	4.1	769	449	3.4
Michigan	100	469	.5	746	1,877	3.4	1,272	1,698	5.7
Wisconsin	3	113	.....	125	409	.6	333	429	1.5
West North Central:									
Minnesota .....	.....	.....	.....	^a	13	.....	13	76	.1
Iowa	15	356	.1	150	780	.7	259	384	1.1
Missouri	348	907	1.8	763	1,118	3.5	938	793	4.2
Dakota Territory ..	.....	.....	.....	.....	.....	.....	^a	40	.....
Nebraska .....	.....	.....	.....	.....	.....	.....	2	82	.....
Kansas .....	.....	.....	.....	.....	.....	.....	18	164	.1
Mountain:									
New Mexico .....	.....	.....	.....	378	6,130	1.8	830	8,877	3.7
Utah .....	.....	.....	.....	3	287	.....	38	927	.2
Nevada .....	.....	.....	.....	.....	.....	.....	^a	55	.....
Pacific:									
Washington .....	.....	.....	.....	.....	.....	.....	10	876	.....
Oregon .....	.....	.....	.....	15	1,157	.1	86	1,640	.4
California .....	.....	.....	.....	18	190	.1	1,088	2,863	4.9

^a Less than 500.

IN NEW YORK.

In New York similar conditions prevailed. From Washington County a correspondent reported: ¹²

“Many who kept large flocks of sheep in this county, have quit the business and gone into the dairy business, which is much more profitable, for when cows are rightly managed, it is not uncommon to realize from \$30 to \$40 per head. Almost any kind of business will pay better than growing wool at 2½ pounds per fleece.”

Jefferson County in 1849 reports ¹³ that “the low price of wool and the profits of dairy-husbandry have done away with most of our sheep farms.” Madison County, in 1841 reported that Merino and Saxony grade sheep were kept in flocks from 70 to 100, and from 300 to 1,000 on a farm, no pains being taken to shelter them in winter, except by a few of the best farmers.¹⁴ In 1848 it was again reported: ¹⁵

“There are some excellent flocks of sheep in this county, but since the growing of wool in the far west has been so extensively gone into, many of our wool growers have quit that business, and turned their attention to the dairy.”

Chautauqua County reported ¹⁶ that—

“The land in this county is as well adapted to dairying purposes as to wool-growing; and as the former business is the more profitable it has been largely increased, to the neglect of the wool-growing interest, which has commonly decreased in the same ratio.”

Thousands of sheep were annually slaughtered for fat and tallow.¹⁷

MEDIUM AND COARSE WOOLED MUTTON BREEDS GAIN
IN THE EAST.

With the decrease of wool-growing in the East came a movement away from fine-wool sheep to the medium wool and mutton type.¹⁸ Medium wool had suffered much less than fine wool from the decline in wool prices following 1837. The growth of population and of wealth of the eastern cities was causing an increasing demand for mutton. By 1840 the growing popularity of Southdown, Leicester, and other medium or coarse-wooled mutton breeds was apparent. Improved breeds of sheep had been introduced into the United States at an early date. (See above, p. 217.) The tendency of improvement up to about 1840, however, had been towards fine-wooled sheep. The Merinos imported by Humphrey, Livingston, Jarvis, and others had been carefully bred in the Eastern States, especially in Vermont. They were widely crossed on the native sheep, and thus the weight of their fleeces had been greatly increased. In the search for fine-wooled sheep during the thirties, Saxony sheep had been introduced and crossed upon the Merino and native ewes—a step deeply regretted by most flock owners at a later date.¹⁹ Only a few flock masters, and these mostly in Vermont, kept their Merino stock pure. The

¹² *Cultivator*, new series, IX (1852), p. 80.

¹³ U. S. Patent Office, *Annual Report* 1849, *Agriculture*, 112.

¹⁴ N. Y. State Agric. Soc. *Transactions*, I (1841), p. 143.

¹⁵ U. S. Patent Office, *Annual Report* 1848, *Agriculture*, 404.

¹⁶ *Ibid.*, 1849, p. 243.

¹⁷ *Ibid.*, 1848, p. 409.

¹⁸ *Cultivator*, new series, VII (1850), p. 291.

¹⁹ N. Y. State Agric. Soc. *Transactions*, III (1843), p. 445.

Saxony, while having a very fine wool, yielded a very light fleece, had a small body, and proved less hardy in the northern climate than the other breeds. In nearly all western wool-growing sections in 1840, fine-wooled Saxony and Merino grades were still in vogue;²⁰ although in the East they were giving way to the Southdown, Leicester, and other coarse-wooled mutton breeds.

TABLE 52.—*Wool: Production in the United States.*

[Source: U. S. Censuses of 1840, 1850 and 1860.]

Geographic division and State.	1840.		1850.		1860.	
	Total (1000 lbs.)	Per cent of U. S. total.	Total (1000 lbs.)	Per cent of U. S. total.	Total (1000 lbs.)	Per cent of U. S. total.
United States	35,802	100.0	52,517	100.0	60,265	100.0
Geographic Division:						
New England	8,441	23.6	7,086	13.5	6,578	10.9
Middle Atlantic	13,291	37.1	14,928	28.4	14,556	24.2
East North Central...	5,733	16.0	17,254	32.9	20,124	33.4
West North Central..	585	1.6	2,001	3.8	2,779	4.6
Mountain .....	.....	.....	42	.1	568	.9
Pacific .....	.....	.....	35	.1	2,922	4.8
New England:						
Maine	1,466	4.1	1,364	2.6	1,495	2.4
New Hampshire	1,260	3.5	1,109	2.1	1,160	1.9
Vermont	3,699	10.4	3,401	6.5	3,119	5.2
Massachusetts	942	2.6	585	1.1	377	.6
Rhode Island	184	.5	130	.2	91	.2
Connecticut	890	2.5	497	1.0	336	.6
Middle Atlantic:						
New York	9,845	27.5	10,071	19.2	9,454	15.7
New Jersey	397	1.1	375	.7	349	.6
Pennsylvania	3,049	8.5	4,482	8.5	4,753	7.9
East North Central:						
Ohio	3,685	10.3	10,197	19.4	10,609	17.6
Indiana	1,238	3.5	2,610	5.0	2,552	4.2
Illinois	650	1.8	2,150	4.1	1,990	3.3
Michigan	153	.4	2,043	3.9	3,961	6.6
Wisconsin	7	.....	254	.5	1,012	1.7
West North Central:						
Minnesota .....	.....	.....	^a	.....	20	.....
Iowa	23	.1	374	.7	661	1.1
Missouri	562	1.5	1,627	3.1	2,070	3.4
Nebraska .....	.....	.....	.....	.....	3	.....
Kansas .....	.....	.....	.....	.....	25	.1
Mountain:						
New Mexico .....	.....	.....	33	.1	493	.8
Utah .....	.....	.....	9	.....	75	.1
Nevada .....	.....	.....	.....	.....	^a	.....
Pacific:						
Washington .....	.....	.....	.....	.....	20	.....
Oregon .....	.....	.....	30	.1	219	.4
California .....	.....	.....	5	.....	2,683	4.4

^a Less than 500 pounds.

From Columbia County, New York, in 1849 it was reported:²¹

"Wool growers located in the vicinity of our large cities and towns, who have heretofore bred fine Saxony sheep, have to a great extent within the past five years changed

²⁰ *Ibid.*, (1841), p. 134.²¹ U. S. Patent Office, *Annual Report 1849, Agriculture*, 244.

their flocks for large-framed, coarse-wooled sheep, whose carcasses are valuable for mutton; and they derive a great profit from the Leicester, Southdown, and Cotswold sheep, and their crosses with the native and other breeds."

From Rhode Island in 1850: ²²

"Sheep have decreased in number very much, of late. They are now kept, not so much for wool, as for the rearing of lambs, which are sold to the butchers at about three months old, and bring about \$2 per head."

IN PENNSYLVANIA.

The increase in sheep-raising in Pennsylvania during the decade 1840 to 1850 occurred entirely in the western counties of the State, while in the central and eastern counties, as in New England and New York, there was a large decrease. In Washington County, on the western edge of the State, wool was said to be "perhaps more extensively grown than in any other county in the Union."²³ In the central and eastern part of the State but few sheep were raised, and these mostly in small flocks for domestic use or to be sold as mutton (see figs. 98, 99). In the southeastern counties of Pennsylvania, in New Jersey, and in northern Delaware many sheep were purchased from western drovers in the fall and fed during the winter season.²⁴ In 1848 it was said that 25,000 head were annually driven into Delaware County, Pennsylvania, from the western portion of that State, "fattened on spare pasture after the harvest, and sold principally for the Philadelphia market."²⁵

INCREASE OF WOOL-GROWING IN THE WEST.

While wool-growing was declining in the East, it was increasing in the West. In Ohio the number of sheep nearly doubled during the decade 1840 to 1850. East of the Scioto River, wool-growing was considered one of the most profitable pursuits.²⁶ In the wheat-growing region and in the Western Reserve their number was rapidly increasing. As early as 1830 the improved English breeds had been taken into the State, but Merino and Saxony grade sheep were more popular. It was said that for fineness, the wool staple grown in the western counties bordering on the Ohio River could not be excelled in any other portion of the Union.²⁷ Merino bucks in large numbers were imported from the best Vermont flocks. A notable flock was that of Wells & Dickinson, of Steubenville, established in 1806, which became one of the most celebrated in the United States and a source of improved sheep for Ohio and western wool-growers.²⁸

By 1849, however, it was reported ²⁹ from Green County, Ohio, that—

"a tide is now setting in, in favor of long coarse wool, as the merchants pay nearly as much for it as for fine and on account of the mutton properties of the long woolled sheep, the true policy of wool-growers is to produce such wool as the wants of the

²² U. S. Patent Office, *Annual Report 1850, Agriculture*, 477.

²³ *Ibid.*, 1849, p. 256.

²⁴ *Ibid.*, 1850, p. 306; 1852, p. 172.

²⁵ *Ibid.*, 1848, p. 450.

²⁶ *Ibid.*, 1850, p. 392; Ohio State Board of Agric., *1st Annual Report (1846)*, p. 7.

²⁷ Ohio State Bd. of Agric., *1st Annual Report (1846)*, p. 30.

²⁸ *Cultivator*, new series, V (1848), p. 10.

²⁹ Ohio State Bd. of Agric., *4th Annual Report (1849)*, p. 106.

country demand, and that will be but a small amount of the very fine, and an equally small amount of the coarse, hairy Leicester and others of a similar grade."

In Ohio, as in Vermont, large numbers of sheep were slaughtered for their pelts and tallow;³⁰ but in the former State it was regarded as a question whether on the cheap and productive pastures sheep could not be profitably raised for this purpose alone.³¹

In Michigan, where the number of sheep was rapidly increasing, wool-growing was second only to wheat-raising as the chief business of the farmers, and those who gave it proper attention were said to be reaping even a richer reward than those who confined themselves to the great staple, wheat.³² With the opening of the railroads, sheep for mutton began to be sent to the eastern markets.³³

WOOL-GROWING ON THE PRAIRIES.

West of Ohio but few farmers had begun sheep-raising as a business before 1840. Many kept flocks of 100 or less for domestic purposes, but not for the sale of wool. But as the settlement of the prairies, which had well begun by 1840, became increasingly dense, farmers, in seeking for a marketable staple, began to turn their attention to wool. The free range of the prairie furnished abundant food; wool with a high specific value was easily sent to the distant eastern market.³⁴ Adam Beatty expressed the opinion of many in the West in the *American Agriculturist*,³⁵ in 1845. He wrote:

"The difficulty of finding an adequate market for our rapidly increasing agricultural products, renders it necessary that we should avail ourselves of as many new sources for the profitable employment of land and labor as possible. Nothing, in our present circumstances, is better calculated for this purpose, than sheep husbandry. We have land in great abundance, whilst labor is comparatively scarce. Sheep husbandry requires much land, and is attended with the advantages of requiring comparatively few laborers, and, instead of exhausting, tends greatly to fertilize the land thus appropriated."

In the minds of many of the early settlers of the West, who were acquainted with the rough, hilly sheep-raising section of the East, the impression prevailed that the western climate and prairie lands were not adapted to the raising of wool. It was assumed that "the prairies are too level for sheep; affording no protection against winds or chance for climbing."³⁶ Prairie and timber wolves proved a source of considerable loss to the early flocks.³⁷ Increased interest in sheep, however, caused the publication of statements by many men who had been long engaged in wool-growing, notably George Flower, of Edwards County, Illinois, who had been breeding sheep in that county since 1817.³⁸ These reports helped to overcome the belief among the settlers on the prairie region that sheep could not be made to thrive.³⁹

³⁰ *Cultivator*, new series, VI (1849), p. 157.

³¹ U. S. Patent Office, *Annual Report* 1845, p. 338.

³² *Ibid.*, 1852, *Agriculture*, 281; (1850), p. 330.

³³ *Ibid.*, 1852, *Agriculture*, 275.

³⁴ *Prairie Farmer*, IV (1844), p. 274; III (1843), p. 207.

³⁵ U. S. Patent Office, *Annual Report* 1845, p. 1013.

³⁶ *Prairie Farmer*, III (1843), p. 238.

³⁷ *Ibid.*, VII (1847), p. 213.

³⁸ *Loc. cit.*

³⁹ *Ibid.*, III (1843), p. 238.

DRIVING SHEEP WESTWARD.

While the eastern wool-growers in the early forties were asking, "How much does it cost to grow a pound of wool?" the farmer of the Western States was asking, "How, when and where can I obtain a drove of sheep?"⁴⁰ The prairie farmer or newly arrived immigrant in this newly settled region sought a flock of sheep with which to begin wool-growing. Sheep were in demand; but they were not to be had except in small numbers, of a poor quality, and at high prices.⁴¹ The driving of large flocks of sheep from Ohio and Pennsylvania and other old sheep-raising regions into the newly settled region of Illinois, Missouri, Iowa, and Wisconsin began. By 1843 sheep were said to be pressing westward at an "enormous rate."

A farmer in Kane County, Illinois, in 1843 wrote to a wool-grower near Pittsburg, Pennsylvania, "that he would be glad to take 1,000 sheep and give the owner all the wool, reserving to himself the increase of the flock for the keeping, or he would give the increase and take the wool for the keeping."⁴² Others, possessing capital, brought sheep by the thousands to the prairies and loaned them to settlers on contract "to pay one and a half to two pounds of wool annually per head and to return a flock equal in all respects after a term of years."⁴³

SHEEP DRIVING FROM CENTRAL OHIO TO CHICAGO
IN 1843.

Solon Robinson, in 1844, in an article in the *Prairie Farmer*,⁴⁴ under the heading, "When, where, and how to get a drove of sheep," states that "The nearest point where sheep can be bought to good advantage, is in some of the central counties of Ohio." These counties were about 300 miles distant from Chicago. He writes further regarding a drive:⁴⁵

"I left home last year the last of August, with one man and a boy 12 years old; I was absent 37 days, and brought in about 800 head of 'good common' sheep; that is, an average of about half-blood Merino. I bought in Champaign and Clark Counties, (Ohio), on the waters of Mad River. The prices varied from 50 to 87½ cents, and averaged upon the 500 which I bought myself, 66¾ cents. . . . It may safely be said that one can go from Chicago to Ohio and bring in from 500 to 800 head of sheep, at 25 cents a head, and that a good lot will cost less than 70 cents a head. . . .

"Distance from Chicago, 300 miles; the route, by La Porte, South Bend, Goshen, and Fort Wayne, Ind., Wiltshire, St. Mary's, Sidney, Urbana, Springfield, etc.; or else from St. Mary's bear more east through Logan, Union and Delaware Counties of Ohio. Another route is through Michigan by way of Toledo, into the northeastern part of Ohio, which will increase the distance and cost of sheep, but generally speaking gives a better quality—that is to say, a finer wool breed; leaving the word better for future discussion. . . . When starting for a drove from here, I would have a good light two horse wagon, a feed trough attached behind; a good tent, made of 30 yards cotton drilling; 2 buffalo skins, 3 blankets, 1 horse bucket, 1 do. for drinking water, 1 tea kettle, (as men will drink coffee, and so will I when on the road where I am obliged to make the water bitter to destroy a worse taste), 1 coffee pot, a pound of ground coffee

⁴⁰ *Prairie Farmer*, IV (1844), p. 205.

⁴¹ U. S. Patent Office, *Annual Report* 1853, *Agriculture*, 47.

⁴² *Prairie Farmer*, III (1843), p. 3.

⁴³ Sears, *Pictorial Description of the United States* (1848), p. 546.

⁴⁴ *Prairie Farmer*, IV (1844), p. 205.

⁴⁵ *Loc. cit.*

in a little bag, a frying pan, a small pot, 6 round tin plates, 3 cups, 3 knives and forks, a little pail for butter, a wooden box for sugar, a few other small fixings in the provision chest, 40 pounds of bacon, a week's supply of bread, a bag of potatoes, two or three bags of oats, a trunk of necessary clothes (old ones), an axe, an auger, a little spare rope and a few leather strings—and I am ready for a start. Rain or shine I would sleep dry and warm in my tent, which is made, when set up, in the shape of the roof of a house, the ridge supported on a pole placed upon two posts about seven feet long, sharpened and stuck into the ground; the bottom is fastened with pins, one gable end closed and the other open towards the fire—cooking my own supper and eating it from a broad board held up on four sticks stuck in the ground, and partaking of all the comforts and conveniences that an 'old camper' always knows how to provide.

"I would take with me a man and a boy, and a saddle and bridle, but no saddle horse, because I can purchase one there for \$25 or \$30 that would bring \$40 at home. In driving sheep, a good dog or horse is very necessary; the average distance should not be over ten miles a day, if yarded at night; or thirteen miles if pastured at night. The expense of the baggage wagon and horses and driver is much less than it would be without them, besides the great convenience of having a wagon along, which enables one to camp wherever wood, water and feed can be had at night, without being obliged to 'push ahead' to a tavern.

"Two good drivers can drive from 500 to 800, though three are much better, and sometimes actually necessary.

"I find on looking over my memorandum, that I was nine days traveling last summer, before I commenced buying, with three hands and three horses—cash out \$5.61, including horse-shoeing and wagon-repairing—all the horse feed purchased, and nearly all the provision taken from home. I spent about a week in buying, and hired an extra hand at a dollar a day, which with the cost of collecting and keeping sheep, etc., is all included, as before stated, in the average expense per head. I was 3 weeks on the road home—800 sheep, 4 horses, 3 hands, and about half the time four hands to board, and the expense of everything was \$35.04, averaging \$1.66 $\frac{3}{4}$ a day, and grain enormously dear on account of the scarcity occasioned by the great drought. The actual cost of driving 800 averaged per head 4 $\frac{3}{8}$ cents, and adding in time of men and horses, not over 9 cents a head."

EASTERN SHEEP FARMERS MOVE WESTWARD.

Bauer & Eno of Sagamon County, Illinois, in 1844, assisted by a Mr. Flower, brought about 3,500 ewes and 80 bucks into the State, selected from various flocks in western Pennsylvania and Ohio. The flocks were headed by a "Merino buck from Vermont."

Because of the high costs involved, relatively few ewes were driven from Vermont, unless for the purpose of establishing a breeding-flock. Most western wool-growers, however, preferred a "Vermont Merino ram" to head the flock. In Lee County, Iowa, in 1854, good "Vermont Merino rams" were valued at from \$50 to \$200 each.

Many eastern wool-growers moved to the West, bringing their flocks with them. The *Prairie Farmer* noted this movement in 1843:⁴⁶

"Eastern farmers seem to be already aware of the advantage enjoyed over them by prairie farmers in wool-growing, and many are turning their attention to other articles. Others, who have informed themselves, are removing here, where they know they can successfully compete with farmers from any section. Last fall we were called upon by James Harris, Esq., of Penn Yan, N. Y., who said he was engaged in wool-growing, and that he had come out to look for himself and see if the truth had been told with regard to competition from the West. He found it was indeed so, and that he must change his business or remove West. He returned East to form his determinations,

⁴⁶ *Prairie Farmer*, III (1843), p. 207.

and in the spring we saw him here again, and he said he should the coming fall drive out 2,000 Merino ewes. . . ."

Messrs. Harvey of Illinois wrote in 1844:⁴⁷

"But a few years since we emigrated from Vermont into this state. We soon became satisfied that wool could be grown much cheaper here than in our own native state. In 1843, we purchased in Columbiana County, Ohio, 2,300, and drove them through by land into this region."

In 1844, "the great sheep year," it was said that the rush of sheep from the East into Illinois, Wisconsin, and Missouri was "a perfect tornado."⁴⁸ Many of the ventures in wool-growing, however, resulted in loss. On the long drives from the East many sheep died. Newly arrived immigrants, of limited means and unacquainted with the prairies or the care of sheep, failed to provide winter feed, or shelter from the winds and storm, the prairie mud, or the wolves.

Moreover, 1843 marked the beginning of the return of better prices for the staple products in the West. Wheat had just begun to find sale at prices which would a little more than pay the cost of production. The rate of increase in sheep was therefore much less during the next few years, until the general failure of the winter-wheat crop in northern Illinois, Wisconsin, and Iowa led many farmers to turn their attention again to general farming, in which sheep-raising occupied a prominent place.⁴⁹ Wool-growing in the prairie region of the West in 1849 was not carried on to the exclusion of other branches of farming, nor could any large territory west of Ohio and Michigan be called a distinctly sheep-raising region. Many large flocks had been established,⁵⁰ but the increase was only in proportion to that of other lines of production. In Peoria County, in the sheep region of central Illinois, there were reported in 1849 to be 5 flocks of from 1,000 to 2,000 sheep, 2 flocks of from 500 to 1,000, and 3 flocks of from 300 to 500.⁵¹

SHELTER AND FEEDING OF SHEEP IN THE EAST AND IN THE WEST.

Among the best farmers of New York and New England in 1849, sheep were sheltered during the winter months in cheap but well-constructed buildings.⁵² Hay, straw, and corn stover, with occasionally oats, potatoes, or other roots,⁵³ was the usual ration during the winter feeding season, which lasted for fully 5 months. In the wheat-growing regions of New York, Michigan, and eastern Ohio, sheep were regarded as especially useful to reduce the straw stack to manure in the winter and to graze over the stubble-land in the fall. In addition to the profits from the sale of wool, the sheep was said to cheapen very much the raising of wheat. They ran upon the fallow land in the summer and to the straw-stack through the winter almost until spring, when a little hay and a little grain were fed to them.⁵⁴ A cheap method of

⁴⁷ *Cultivator*, new series, III (1846), p. 21.

⁴⁸ *Prairie Farmer*, IV (1844), p. 204.

⁴⁹ Wis. State Agric. Soc. *Transactions* (1851), p. 228; *Prairie Farmer*, XII (1852), p. 114.

⁵⁰ *Prairie Farmer*, IX (1849), p. 296.

⁵¹ *Ibid.*

⁵² N. Y. State Agric. Soc. *Transactions*, I (1849), pp. 58, 700.

⁵³ *Ibid.*, (1842), p. 140; U. S. Patent Office, *Annual Report* 1845, p. 341.

⁵⁴ U. S. Patent Office, *Annual Report* 1854, *Agriculture*, 52.

wintering sheep was to put them on good winter pasture, "feeding only in severe weather in time of snow," and then only corn stover or other rough fodder.⁵⁵ Among many of the "old wealthy farmers" of Jefferson, Harrison, Belmont, and other eastern counties of Ohio, who had realized large fortunes from their extensive flocks of fine-wooled sheep, it was said to be well understood that "the more sheep, the more clover the land can be made to produce, and the larger the yield of clover the greater will be the quantity of wheat the soil is capable of producing."

MANAGEMENT OF SHEEP ON THE PRAIRIES.

In the prairie region sheep were commonly allowed to graze during the spring and fall, and frequently during the entire year, with no other care or

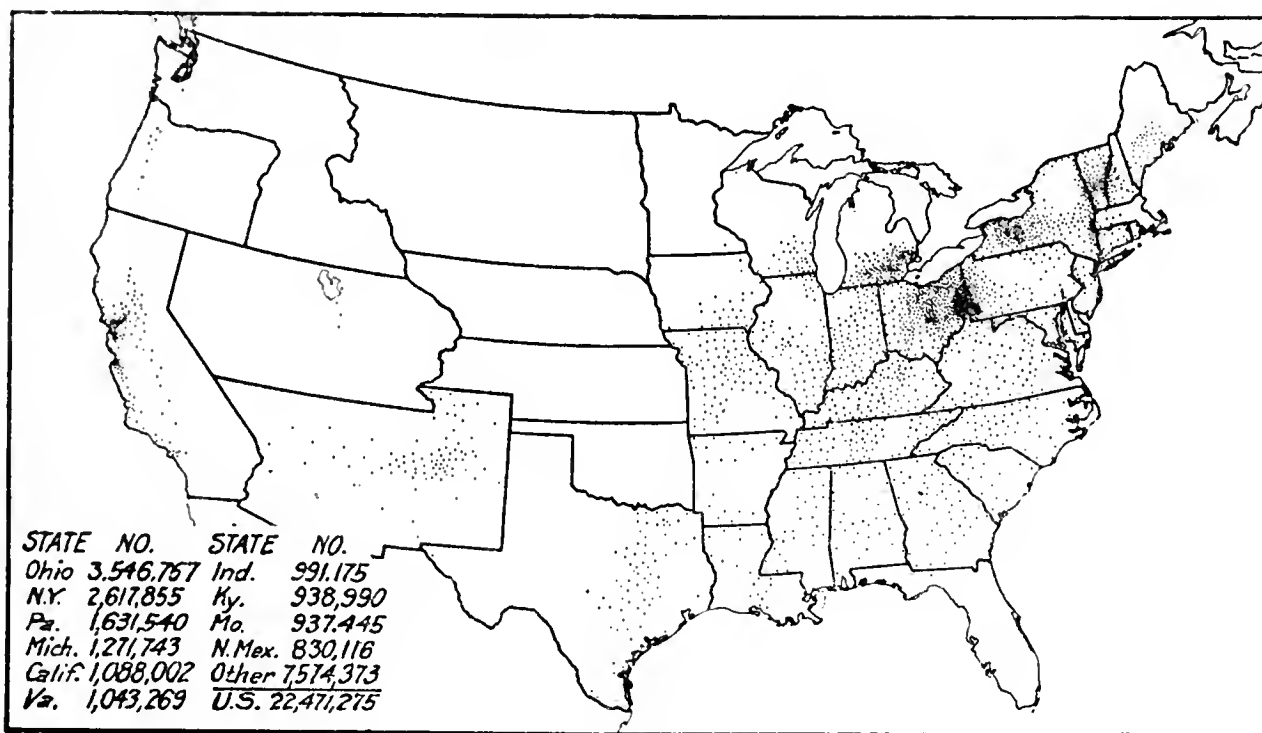


FIG. 100.—Sheep and Lambs, 1860. Each dot represents 10,000 head.

During the fifties the decline in the eastern states continued. Sheep had begun to decrease in Ohio by 1860. The wool growing region was moving farther west into Michigan, Texas, and New Mexico. In California there was an increase of over 6,000,000 sheep during the decade 1850-1860.

protection than that afforded by the strawstack or a rail fence. Many of the best sheep raisers took their sheep to the open prairie in April, where they were allowed to run, rent free, under the care of a shepherd who supplied them with salt. In the fall they were turned on tame-grass pastures, and in the winter brought to an inclosure where they were supplied with hay and a little oats and corn.⁵⁶

A much-debated question among wool-growers was the washing of the fleece on the back of the sheep. The practice had the support of ancient usage, but was open to serious objection, as the sheep were liable to serious injury, and sometimes death resulted from exposure.⁵⁷ The practice was rapidly declining.

⁵⁵ *Ibid.*, 1852, p. 263.

⁵⁶ *Country Gentleman*, XIV (1859), p. 347.

⁵⁷ U. S. Patent Office, *Annual Report* 1847, p. 212; 1854, *Agriculture*, 37.

The census of 1860 showed that for the country as a whole, sheep had increased hardly at all during the previous decade. In the Eastern States the decrease of 1840 to 1850 had continued, but at a slackened rate. Ohio, New York, Pennsylvania, Michigan, in the order named, were the leading States. Ohio, Indiana, and Illinois, which had been the center of sheep-raising from 1840 to 1850, showed a decrease during the next decade. The center of sheep-raising had moved west, and in 1860 California, Texas, and New Mexico showed the largest increase. In California there were in 1850 less than 20,000 sheep and in 1860 over 1,000,000; in Texas the increase was from 100,000 to 750,000, and in New Mexico from 377,000 to 830,000 (see figs. 99, 100). The sheep drives of the previous decade were repeated; not now from the East to Illinois, but from Illinois to Texas.⁵⁸

In New England, the three southern States, Massachusetts, Connecticut, and Rhode Island, had shown the largest decrease in the number of sheep since 1840. In the three northern States, Vermont, New Hampshire, and Maine, there was still much cheap mountain land adapted to grazing, but which because of the lack of buildings or means of transportation was not suitable for dairying. The relatively heavy fleeces yielded by many Vermont flocks, together with the high prices received from western and southern breeders for purebred Vermont Merino stock, enabled many Vermont breeders still to maintain their flocks at a profit. The census of 1860 reports the average weight of fleece in Vermont at 4.1 pounds; for the United States as 2.7 pounds. In Maine, the only New England State showing an increase in sheep from 1850 to 1860, they were regarded as of great assistance in clearing brush-land pasture. In New York, in the dairying districts of the eastern and central part of the State, wool-growing had greatly declined. In 1860 it was centered in the wheat-growing districts of the Genesee region. In Ohio, after about 1854, the number of sheep began to decline.

TABLE 53.—*Decline of sheep in Ohio, 1850 to 1860.*^a

1850	3,812,707	1855	4,337,943
1851	3,619,674	1856	3,513,680
1852	3,059,796	1857	3,276,539
1853	4,104,450	1858	3,377,840
1854	4,845,189	1859	3,366,073

^a U. S. Patent Office, *Annual Report 1862, Agriculture*, 262.

Fine-wool sheep rapidly diminished in number, and long-wooled mutton sheep began to attract more attention. The Western Reserve region was constantly increasing its dairy production, with a corresponding decrease in wool production. In the southern part of the State a "shorthorn mania" was said to have hindered somewhat the improvement of sheep.⁵⁹

A Miami County, Ohio, farmer wrote in 1858:⁶⁰

"I have no doubt fine wooled sheep are decreasing yearly in this county, and I believe in the Miami valley generally, at least for the last few years. The cause, I think, is obvious; lands are becoming too high priced to afford a profit from wool growing.

⁵⁸ *Country Gentleman*, XV (1860), p. 284.

⁵⁹ *Loc. cit.*

⁶⁰ Ohio State Bd. Agric., *14th Annual Report* (1859), p. 582.

A farm, costing \$50 or over per acre, cannot be made to pay a living profit by turning it into a sheep farm, where the sheep are valuable mainly on account of their wool. Besides, fine woolled sheep require more care and nursing than most of our farmers are willing to give them, without which they will soon run down and become worthless. . . . I know many farmers who are starting flocks of mutton sheep, but none who are going into the business of raising fine wool."

With the coming of the railroads, sheep were fattened in Ohio for the eastern markets, and in addition there was a demand for sheep from the West and South. Many sheep were driven from Ohio to Texas. In Michigan the number of sheep continued rapidly to increase, as during the previous decade.

SHEEP DRIVING FROM ILLINOIS TO TEXAS IN 1860.

D. A. A. Nichols gives a good description of a sheep drive from Illinois to Texas in 1860: ⁶¹

"The distance from the Mississippi River at Hannibal, Mo., to the Missouri River at Boonville is, in round numbers, 100 miles. From Boonville to Carthage, Mo., is some more than 200 miles. From Carthage to the crossing of the Arkansas River in the Indian Territory is 160 miles. From the Arkansas to the Red River is called by some 180 miles, by others 200 miles. There are three toll bridges on the route, and the toll was usually five dollars for 2,000 sheep or more. The streams they ferried were the Mississippi, Missouri, Grand, Osage, and Arkansas. Ferriage usually costs one-half cent per head. They swam their flocks across the Canadian and Red Rivers, and all the minor streams along the route. Water is plenty along the road; but sometimes good drinking water cannot be found without going a little off the main Texas road. . . .

"Sheep have to be penned every night when on the road, to keep them together and preserve them from wolves. Those who are intending to start drives this summer, would have to get their pens in Illinois or Missouri, as rope or cloth cannot be procured reasonably in the 'Nation.' Good yardwide sheeting makes a good pen. Stakes must be sewed in at the corners, and in the middle of each side of the pen, to stretch or tighten the cloth making the pen octagonal. A pen made of rope and stakes is not blown down by winds as easily as cloth pens, but the cloth pens do not get tangled when rolled up like ropes. Drovers have to cook their own food on the road. Groceries must be procured before starting. Flour and bacon can be obtained along the route. A good covered wagon and team, a portable stove, an extra horse or mule to ride, good guns and ammunition, to supply the larder with game, a small but good tent, are among the necessities in making up the outfit.

"The cost per head of the sheep is about ten cents from Illinois to Texas. This is for ferriage, bridges, etc., and is in addition to the cost of the driver's provisions and outfit.

"It is better to drive half way only, the first season, as the sheep get partially acclimated, and it is too hard a drive to take sheep from Illinois to Texas in one year. Mr. Dickson and my brother wintered in Jasper County, Missouri, and were satisfied that they were wise, although it cost something for feed. Mr. D. says that he knows one man who drove through in one year, who had 1,000 sheep, for which he paid \$4 per head in Illinois, and he lost 300 old sheep and all his lambs; another flock of 700 now counts but 150, in consequence of the hard drive. Corn can usually be bought in the shock, in Missouri for 25 to 30 cents, and the prairie grass and corn fodder with the corn will keep sheep in good order. In the summer the dust is somewhat troublesome, but after the middle of August, the roads are good and usually free from dust. Sheep which cost \$4 per head in Illinois are worth in Texas from \$8 to \$10 per head, and the wool sheared in Missouri will more than pay all cost of wintering and labor. The cost of wintering in Texas is simply the labor of penning.

"I omitted to mention, among the necessary items of the outfit, a water keg. There are times when it is impossible to camp on a 'branch' or stream, and a keg of water is

⁶¹ *Country Gentleman*, XV (1860), p. 284.

then needed. A good shepherd's dog is of use, although not absolutely requisite. A well trained dog will take the place of one man, in driving and watching."

Sheep-driving from New Mexico to Mexico had been a common practice since 1800. After 1849 the gold excitement in California attracted flocks to that State. Between 1850 and 1860, 600,000 sheep, it was estimated, were driven from New Mexico to California. In 1856-57 sheep sometimes brought as high as \$16 per head, but when the drives were larger from \$3 to \$4 per head was a more common price.⁶²

WHEAT DISPLACES SHEEP ON THE PRAIRIES, 1850 TO 1860.

Of the prairie States of the Northwest, Indiana and Illinois showed a decline in sheep raising, while Wisconsin, Iowa and Missouri showed but a relatively small increase. A reason for the decline and neglect of sheep in the prairie region lay in the rapid extension of wheat-growing. Improved methods of harvesting, high prices, and good yields of wheat during the middle years of the decade 1850 to 1860, turned attention to that crop. The prairie farmer as yet sowed little clover, and regarded as of little value the fertility to be gained by grazing his wheat fields with sheep—practices which were highly regarded by the Ohio wool and wheat grower. The rush of sheep into the prairies during the forties had resulted in many failures. Newly-arrived immigrants, frequently without any previous experience in handling sheep, established large flocks, but failed to provide shelter or winter feed. The open prairie furnished no protection from the cold winter winds or the spring rains. The prairie grasses furnished abundant food during the summer months, but were killed by the first frost of autumn, and few had as yet provided themselves with the tame grasses.⁶³

IN IOWA.

In Iowa, a writer thus explains the decline of wool growing:⁶⁴

"The pioneer removed from Pennsylvania or Ohio; he brought his flocks with him; he left behind him tame grasses, small pasture fields highly cultivated, 'bbabbling brooks'; the cool shade of the woods, the sheep cote, built regardless of expense, and with wise reference to the health and comfort of his sheep. He reaches Iowa and finds acres of tall waving grass; no shade from sun or protection from cold. Of course his sheep deteriorate; naturally his flock would decrease; for there was no care bestowed upon it, such as had been practiced in the old home. Forgetting all the influences he had left, and not appreciating the deprivations to which his flock was being subjected, he rashly concluded that Iowa was no place for the wool-grower. Finding, also, a munificent return for his labor in grain-growing, converted into hogs and cattle, he remained satisfied with his full crib and broad acres, and abandoned his dwindling flock."

By 1860 it was commonly said in the prairie region that "an easy way to sink a fortune is to go into the sheep speculation."

⁶² U. S. Census of 1880, vol. III, *Agriculture, Supplement, Meat Production*, 35.

⁶³ Iowa State Agric. Soc. *4th Annual Report* (1857), p. 388.

⁶⁴ U. S. Patent Office, *Annual Report* 1864, *Agriculture*, 175.

CHAPTER XXXV.—DAIRYING.

The dairy regions of the United States during the forties lay east of the Allegheny Mountains. The census of 1840 reported the total value of dairy products as \$33,787,000, of which nearly three-fourths was produced in the Eastern States, comprising New England, New York, Pennsylvania, and New Jersey. Over \$10,000,000 worth, or nearly one-third of the total, was produced in New York alone. The dairy product of Ohio was valued at less than \$2,000,000. Farther west few regions produced sufficient dairy products to supply their home demand, and many had to bring in butter and cheese from other sections.¹ During the forties dairying increased rapidly in the Eastern States and in the Western Reserve in Ohio.

GROWING IMPORTANCE OF DAIRY INDUSTRY IN NEW ENGLAND.

In New England, the growing importance of the dairy industry had long been apparent. Between 1830 and 1840 its advance had been checked somewhat by expansion of sheep-raising in the regions more distant from market, particularly in New Hampshire, Vermont, and in the Berkshires (western Massachusetts and western Connecticut); but by 1840 the farmers of these districts were disposing of their flocks and were giving more attention to dairying.² By 1850 it was said that sheep were being neglected in Vermont, and that all other branches of business were giving way in northern Ohio to cheese-making.³ From Windsor County, Vermont, the State which led New England in the production of both butter and cheese, a writer stated: ⁴ "The productions of the dairy are increasing in the same ratio that that of wool is decreasing, in consequence of the low prices of the latter, and the enhanced value of the former," In Berkshire County, Massachusetts, the increased attention to dairying was said to be due to the low price of wool and the increased facility for placing the butter and cheese upon the Boston and New York markets, whence much of the cheese was sent to the Southern States.⁵ From Somerset County, Maine, in 1851 it was reported: ⁶

"But little attention has yet been paid to dairies. Our distance from a suitable market for the produce of the dairy, and the difficulty of disposing of our calves, have compelled us to raise more cattle than were profitable; . . . but an increased attention is being given to the dairy. Many farmers have reduced their sheep flock, and increased their stock of cows."

¹ U. S. Census of 1840 (*Agriculture and Industries*), 409.

² *Agriculture of Massachusetts, 2d Report* (1838), p. 45.

³ *Prairie Farmer*, IX (1849), p. 260.

⁴ U. S. Patent Office, *Annual Report* 1848, p. 368; 1849, *Agriculture*, p. 88.

⁵ *Ibid.* 1848, p. 356; *Agriculture of Massachusetts, 2d Report* (1838), p. 45.

⁶ U. S. Patent Office, *Annual Report* 1851, *Agriculture*, 136.

Litchfield County, in western Connecticut, which produced one-half of the Connecticut cheese, had long been celebrated for the quantity and fine quality of its product. Farmers in eastern Connecticut and Rhode Island were not so extensively engaged in the dairy business. There, butter and milk for the supply of the villages and seaports were the principal dairy products. Many farmers made their own supply of cheese, and but very little was put on the market.⁷ It seems that enlarging markets and more adequate means of transportation were encouraging the development of the dairy industry in New England.

DAIRYING IN THE HUDSON AND MOHAWK VALLEYS.

In New York State, the Mohawk and Hudson valleys were the centers of the dairy industry. Herkimer, Oneida, Orange, and Dutchess Counties were known throughout the country for the amount and quality of their dairy products.⁸ The industry is said to have had its beginning in Herkimer County about 1810, when dairymen from Cheshire County, Connecticut, settled there, bringing with them the knowledge of the art of cheese-making.⁹ In 1815 the largest dairies in America were said to be in this county, where herds were reported to number from 30 to 40 milking cows. By 1820 the soils of the Mohawk Valley region had become exhausted from continuous cropping to wheat, thus forcing general change in the system of husbandry, and the attention of farmers was turned more to dairying. The increase of cheese production after about 1830 is shown in table 54.

TABLE 54.—*Cheese arriving at Albany over the Erie Canal.*¹⁰

	lbs.
1834	6,340,000
1837	15,560,000
1840	18,820,000
1843	24,334,000

Erie and Chautauqua Counties, in western New York, were also rapidly extending their dairy business.

EXPANSION IN CENTRAL NEW YORK.

By 1850, the dairy region of the Mohawk Valley had expanded, including, in addition to Herkimer and Oneida Counties, Madison, Chenango, and Otsego. Herkimer County alone produced in 1845 over 8,000,000 pounds of cheese, of which 1,356,000 pounds were made in the single town of Fairfield.¹¹ To the North, Jefferson and St. Lawrence Counties were developing as prominent dairy centers. The canal system provided an easy, cheap transportation for the cheese to eastern and southern markets, and good prices also stimulated production. A comparison of the figures given by the New York

⁷ *Ibid.*, 1849, *Agriculture*, 98.

⁸ N. Y. State Agric. Soc. *Transactions*, V (1845), p. 59.

⁹ *Country Gentleman*, XVIII (1861), p. 301. (See above, p. 228.)

¹⁰ U. S. Patent Office, *Annual Report* 1845, p. 326.

¹¹ *Ibid.*, p. 325.

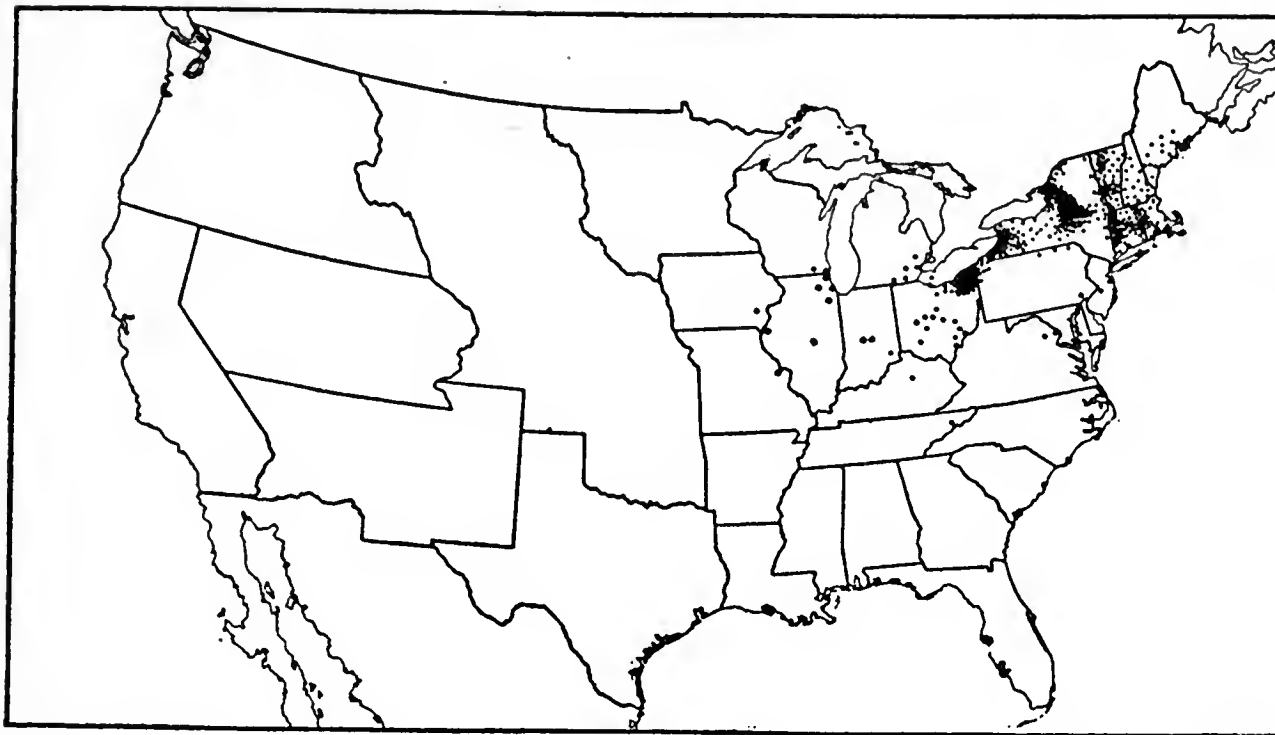


FIG. 101.—Cheese, 1849. Each dot represents 200,000 pounds.

The extensive manufacture of cheese was confined to relatively few regions. In the Berkshires and the Green Mountain region of New England and in Herkimer County, New York, cheese making was an established industry. Jefferson and St. Lawrence counties in northern New York and the vicinity of Erie County in western New York and the Western Reserve in Ohio were rapidly developing centers.

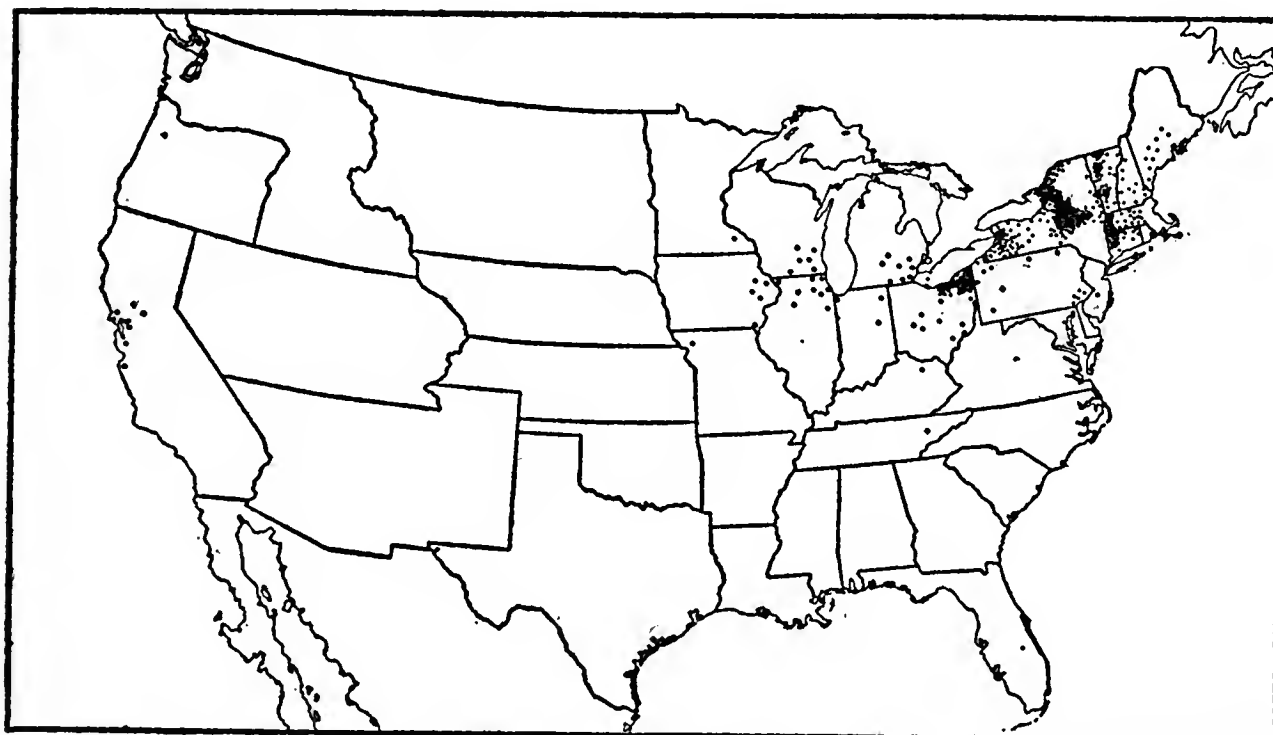


FIG. 102.—Cheese, 1859. Each dot represents 200,000 pounds.

During the fifties the production of cheese declined in New England. It remained nearly stationary in the country as a whole.

State census for 1845 with those of the Federal census of 1850 indicates only a slight increase in butter, but a relatively large increase in cheese production in the 5 years.

TABLE 55.—*Cheese produced in New York in thousands of pounds.*

	New York census, 1845.	U. S. census, 1850.
Butter	79,502	79,766
Cheese	36,745	49,741

Oneida County in 1854 reported: ¹²

“Dairies in this vicinity comprise from ten to fifty cows each. The average product may be estimated at 120 pounds of butter, or 250 to 275 pounds of cheese to a cow. The business has been uniformly good for several years, and nearly all our farmers are engaged in it to some extent; some in connection with other branches of agriculture, and others to the exclusion of nearly everything else. This was once a great wool-growing county, but as our flocks of sheep have diminished the number of cows has increased in proportion.”

METHODS OF MAKING BUTTER AND CHEESE.

The making of butter and cheese, and frequently the milking of the cows as well, was the duty of the women of the farm. Milking by women was, however, becoming less customary. Various methods of making butter and cheese were practiced. Some worked the butter by hand, others with a wooden paddle; some added saltpeter, others thought this practice injured the quality of the butter. Orange County butter was made by churning the whole milk. In Delaware County, Pennsylvania, butter was made from the cream and was worked with a damp cloth. A cool spring-house or a damp cellar was regarded as essential to all dairies. The cause of the superior quality of Orange County butter and Herkimer County cheese was a popular subject of discussion. Some ascribed it to the superior quality of the pastures and springs; others thought it was owing to the method of churning, the quality of the salt, or the neatness of the butter and cheese-makers.¹³

It was the ambition of many dairy regions to produce butter and cheese that would sell upon the New York market at the same price as the famous products of these counties. But the lack of skill and equipment was a great handicap especially in the more newly settled regions. A report from St. Lawrence County, New York, in 1848 reads: ¹⁴

“Our farmers find that the dairy business is the best in which they can engage. . . . But still there is a drawback. In several parts of the county, emigrants from Ireland and Scotland, in considerable numbers, who were unacquainted with the business, are engaged in making butter and cheese. They produce articles of an inferior kind. Their productions injure the price of that which is good; but they are improving, and, no doubt, will continue to mend.”

¹² U. S. Patent Office, *Annual Report 1854, Agriculture*, 21.

¹³ *Ibid.*, 1848, p. 388.

¹⁴ *Ibid.*, 417.

BUTTER-MAKING IN ORANGE COUNTY (N. Y.), 1843.

Butter-making in Orange County in 1843 was thus described: ¹⁵

“The milk is strained in pans or oaken tubs, holding two pails full. Every thing is done in the cellar. The milk is not meddled with until it is coagulated, when each

TABLE 56.—*Cheese: Production in the United States.*

[Source: U. S. Censuses of 1850 and 1860.]

Geographic division and State.	1850.			1860.		
	Total (1000 lbs.)	Per capita (lbs.)	Per cent of U. S. total.	Total (1000 lbs.)	Per capita (lbs.)	Per cent of U. S. total.
United States	105,536	4.6	100.0	103,664	3.3	100.0
Geographic Division:						
New England	27,120	9.9	25.7	21,621	6.9	20.9
Middle Atlantic	52,612	8.9	49.9	51,239	6.9	49.4
East North Central..	24,134	5.3	22.9	26,819	3.9	25.9
West North Central.	413	.5	.4	1,419	.7	1.4
Mountain	37	.5	....	91	.5	.1
Pacific	37	.4	....	1,461	3.3	1.4
New England:						
Maine	2,434	4.2	2.3	1,800	2.9	1.7
New Hampshire	3,197	10.1	3.0	2,232	6.8	2.2
Vermont	8,721	27.8	8.3	8,215	26.1	7.9
Massachusetts	7,088	7.1	6.7	5,294	4.3	5.1
Rhode Island	317	2.1	.3	182	1.0	.2
Connecticut	5,363	14.5	5.1	3,898	8.5	3.8
Middle Atlantic:						
New York	49,741	16.1	47.1	48,548	12.5	46.8
New Jersey	366	.7	.4	182	.3	.2
Pennsylvania	2,505	1.1	2.4	2,509	.9	2.4
East North Central:						
Ohio	20,820	10.5	19.7	21,619	9.2	20.8
Indiana	625	.6	.6	606	.4	.6
Illinois	1,278	1.5	1.2	1,848	1.1	1.8
Michigan	1,011	2.5	1.0	1,642	2.2	1.6
Wisconsin	400	1.3	.4	1,104	1.4	1.1
West North Central:						
Minnesota .....	.....	...	....	199	1.2	.2
Iowa	210	1.1	.2	919	1.4	.9
Missouri	203	.3	.2	260	.2	.3
Nebraska .....	.....	...	....	12	.4	....
Kansas .....	.....	...	....	29	.3	....
Mountain:						
New Mexico	6	.1	....	37	.4	....
Utah	31	2.7	....	54	1.3	.1
Pacific:						
Washington .....	.....	...	....	12	1.0	....
Oregon	37	2.8	....	105	2.0	.1
California	^a	...	....	1,344	3.5	1.3

^a Less than 500 pounds.

day's, or each half day's milk is put in the churn with nearly an equal quantity of water, cold in summer, and warm in autumn or winter, to bring it to the proper temperature, which is from 55 to 60 degrees. The churn is made in the barrel form, of oak, hooped with iron, with a wooden hoop three inches wide at top, in which the cover rests. For six to ten cows, the churn should hold 30 gallons, and in that proportion for a large

¹⁵ *Cultivator*, X (1843), p. 22.

number. I believe they rarely exceed two barrels, as in large dairies they prefer to churn several times a day, to the use of larger vessels. Churning is never done by hand, except for a single cow. In small dairies, the churn is worked by a dog or sheep, the latter being preferred; the larger have water or horse-power. The dog or sheep,

TABLE 57.—*Butter: Production in the United States.*

[Source: U. S. Censuses of 1850 and 1860.]

Geographic division and State.	1850.			1860.		
	Total (1000 lbs.)	Per capita (lbs.)	Per cent of U. S. total.	Total (1000 lbs.)	Per capita (lbs.)	Per cent of U. S. total.
United States	313,345	13.5	100.0	459,681	14.6	100.0
Geographic Division:						
New England	43,924	16.1	14.0	51,486	16.4	11.2
Middle Atlantic	129,132	21.9	41.2	172,465	23.1	37.5
East North Central...	70,557	15.6	22.5	124,017	17.9	27.0
West North Central..	10,007	11.4	3.2	29,054	13.4	6.3
Mountain	83	1.1	....	337	1.9	.1
Pacific	212	2.0	.1	4,248	9.6	.9
New England:						
Maine	9,244	15.9	3.0	11,688	18.6	2.5
New Hampshire	6,977	21.9	2.2	6,957	21.3	1.5
Vermont	12,138	38.6	3.9	15,900	50.5	3.5
Massachusetts	8,071	8.1	2.5	8,298	6.7	1.8
Rhode Island	996	6.7	.3	1,022	5.9	.2
Connecticut	6,498	17.5	2.1	7,621	16.6	1.7
Middle Atlantic:						
New York	79,766	25.8	25.5	103,097	26.6	22.4
New Jersey	9,487	19.4	3.0	10,714	15.9	2.3
Pennsylvania	39,879	17.2	12.7	58,654	20.2	12.8
East North Central:						
Ohio	34,449	17.4	11.0	48,543	20.7	10.5
Indiana	12,881	13.0	4.1	18,307	13.6	4.0
Illinois	12,527	14.7	4.0	28,053	16.4	6.1
Michigan	7,066	17.8	2.2	15,503	20.7	3.4
Wisconsin	3,634	11.9	1.2	13,611	17.5	3.0
West North Central:						
Minnesota	1	.2	....	2,958	17.2	.6
Iowa	2,171	11.3	.7	11,954	17.7	2.6
Missouri	7,835	11.5	2.5	12,705	10.7	2.8
Dakota Territory .....	....	....	....	2	.4	....
Nebraska .....	....	....	....	342	11.9	.1
Kansas .....	....	....	....	1,093	10.2	.2
Mountain:						
New Mexico	^a	....	....	13	....	....
Utah	83	7.3	....	316	7.8	.1
Nevada .....	....	....	....	8	1.1	....
Pacific:						
Washington .....	....	....	....	153	13.2	....
Oregon	211	15.9	.1	1,000	19.1	.2
California	1	....	....	3,095	8.1	.7

^a Less than 500 pounds.

walks on a wheel 8 feet in diameter, inclined at an angle of 22 degrees, cleats being nailed on to prevent the feet of the sheep from slipping. . . . It [the butter] is packed down solid in tubs of 40 or firkins of 80 pounds. . . . When one churning has been packed, a cloth is put on covered with salt. This is taken off at each addition, and replaced, until the tub or firkin is almost full, when half an inch of strong brine is poured over the cloth."

The United States Navy used Orange County butter exclusively, as it was claimed that no butter would as well resist the action of tropical climates. An investigation in 1848, however, disclosed that much butter sold as Orange County butter was in fact made in a number of surrounding counties. Dealers in the butter from other counties labeled their product "Orange County" to take advantage of the preference of the markets.¹⁶ While much of the butter and cheese placed upon the market was of very poor quality, the spread of knowledge concerning the manner of care and making, together with discrimination in price among buyers, was leading to decided improvement in quality.¹⁷ After 1830, dairy methods became a popular theme of discussion in the eastern agricultural journals.

DAIRYING IN SOUTHEASTERN PENNSYLVANIA.

In southeastern Pennsylvania—in Bucks, Montgomery, Chester, Delaware, and surrounding counties—much attention was given to dairying, and especially to the production of butter and milk for the Philadelphia, Wilmington, and Baltimore markets. Very little cheese was made in the State, except in the three counties adjoining the Western Reserve region of Ohio. In New Castle County, Delaware, dairies of from 15 to 100 cows were said to be common in 1847.¹⁸ In northern Maryland, increased attention was given to butter-making, owing, it was said, to the influence of several families of the Society of Friends and a few enterprising northerners. Much of the butter from these regions was carried to market in pound lumps and sold from wagons and market-stalls.¹⁹ The price of fresh butter on the Philadelphia market varied from 16 to 40 cents during the year.

FEEDING METHODS IN THE EAST.

In the East, the dairy herd was commonly pastured during the summer months, and in the winter was fed on corn-fodder and oat straw, with hay once a day. Sometimes 2 quarts of Indian meal or wheat bran per day was added for the last two months of feeding in the barn.²⁰ Especially was the latter true if milk was being sold to the city trade. Much of the butter and cheese was made during the spring, fall, and summer months. In the vicinity of eastern cities, where there was an increasing demand for milk, farmers experimented with soiling. In the neighborhood of Rochester, New York, it was considered good management to keep a cow the year round on an acre of ground.²¹ The extension of transportation facilities, however, together with the high prices of labor, prevented soiling from becoming general.

CHEESE PRODUCTION IN THE WESTERN RESERVE.

The Western Reserve of Ohio, which was settled almost exclusively by New Englanders, was popularly known as "Cheesedom."²² The uncertainty

¹⁶ *Prairie Farmer*, VIII (1848), p. 194.

¹⁷ *Western Farmer*, I (1840), p. 135; N. Y. State Agric. Soc. *Transactions*, II (1842), p. 43.

¹⁸ U. S. Patent Office, *Annual Report* 1849, *Agriculture*, 119.

¹⁹ *Ibid.*, 1850, *Agriculture*, 438.

²⁰ N. Y. State Agric. Soc. *Transactions*, V (1845), p. 59.

²¹ *Loc. cit.*

²² *Cultivator*, new series, VIII (1851), p. 325.

of the grain crops in this region and its adaptability to grazing induced many of the first settlers to turn their attention to dairying. The success attending their efforts led others to follow their example, and before 1849 the manufacture of cheese had become the leading industry.²³ In 1836 the entire state of Ohio produced but little over 1,000,000 pounds of cheese. In 1848 the Western Reserve alone exported 15,593,000 pounds, chiefly to eastern markets, but also to Cincinnati and St. Louis.²⁴ During the forties, wool-growing and dairying had both increased in this region; but by 1850 many farmers who formerly had kept dairies and also raised stock, grew wool, etc., were now turning "their attention wholly to the dairy business."²⁵ Of the 20,820,000 pounds of cheese reported for Ohio by the census of 1850, 17,648,000 pounds were in 7 of the northeastern counties—Ashtabula, Trumbull, Lake, Geauga, Portage, Cuyahoga, and Summit. Lake Erie and the Ohio and Pennsylvania canals furnished cheap transportation for the greater part of the cheese. With the development of California after 1849, large quantities were shipped to that State.

The best dairymen of the Western Reserve erected substantial buildings in which to shelter and feed their cows. In the large dairy sections herds of 30 to 60 cows were kept; in the districts where dairying was of less importance, the herds ranged from 5 to 15 cows.²⁶ Outside of the Western Reserve region, dairying in Ohio was commonly carried on in connection with other farm enterprises. Butter was exported by many Ohio counties, but most counties secured a large part of their supply of cheese from the Western Reserve. By 1850 Michigan was shipping butter to the East.²⁷

WHEAT VS. DAIRYING WEST OF OHIO.

West of Ohio, the greater portion of farmers made more or less butter for use in the home, and a scattered few were engaged in cheese-making. Other pursuits, however, proved more attractive to the western farmer, and in many sections, as for example in the wheat region of southern Wisconsin and northern Illinois, butter and cheese were imported from Ohio. Agricultural journals, however, contended that the New Orleans butter markets should be supplied by the farmers of the Mississippi Valley rather than by those of Orange County, New York. The failure of winter wheat in northern Illinois and in southern Wisconsin for a number of years after 1847 led many transplanted New England and New York families to take up dairying. It was anticipated in Wisconsin that this branch of agriculture would soon rank among the leading interests of the State. Much butter and cheese, however, was still imported. For example, Crawford County, Wisconsin, in 1851 reported that "the most of the cheese consumed in our mines, our pineries, and on this frontier, is made on the Western Reserve in Ohio."²⁸ Dane County

²³ Ohio State Bd. of Agric. *1st Annual Report* (1846), p. 8; *2d Annual Report* (1847), p. 25.

²⁴ *Ibid.*, *3d Annual Report* (1848), p. 9.

²⁵ *Ibid.*, 32; *4th Annual Report* (1849), p. 51.

²⁶ Ohio State Bd. of Agric. *3d Annual Report* (1848), p. 43; *2d Report* (1847), p. 25; *Country Gentleman*, XIV (1859), p. 255.

²⁷ U. S. Patent Office, *Annual Report 1850, Agriculture*, 330.

²⁸ Wis. State Agric. Soc. *Transactions* (1851), p. 148.

reported in the same year:²⁹ "Large quantities of butter and cheese, especially the latter, are annually imported from other states."

BUTTER AND MARKET MILK DISPLACING CHEESE, 1850 TO 1860.

During the decade 1850 to 1860 the number of cattle reported as dairy cows increased from 6,385,000 to 8,586,000. (See figs. 105, 106.) Butter production increased from 313,000,000 pounds to 460,000,000 pounds while the cheese production showed little change. The centers of production of dairy products in 1860 were much the same as in 1850. With the rapid settlement of the West, the number of dairy cows was increasing, especially in northern Illinois, eastern Iowa and Minnesota, southern Wisconsin, and Missouri.

The growing population of the eastern cities demanded an increasing amount of fresh market milk. The extension of railroads was continually providing new means of transportation and opening up new territories from which the supply might be drawn. Regions within the reach of the large cities began to abandon cattle-fattening and the making of butter and cheese and turned their attention more directly to marketing milk. Orange and Dutchess County farmers, long widely famed for their butter dairies, began the production of market milk for New York City. In the State of Massachusetts the sales of milk for the year 1855 amounted to \$760,000.³⁰

With the exception of Pennsylvania and Maryland, every northern State east of Ohio showed a decline in cheese production, while every northern State, with the exception of New Hampshire, reported an increase in butter production. In New England, where the movement was typical of the eastern States, the figures were:

	1850.	1860.
Cheese made	27,120,000	21,621,000
Butter made	43,924,000	51,486,000

New York, which during the period 1845 to 1849 had had a large increase in cheese production and a very little increase in butter production, showed a slight decline in cheese production and a large increase in butter production during the period 1850 to 1860. Cheese exports, which increased from 723,217 pounds in 1840 to 17,433,682 pounds in 1849, had fallen to 3,763,932 pounds by 1853. Butter exports, on the other hand, nearly maintained the level of the previous decade.

In the Western Reserve, cheese-making continued important. West of Ohio there was a small increase in cheese-making, but a considerable increase in butter production. Every section, with the exception of the Pacific Coast, showed a decline in per capita cheese production.

ATTEMPTS TO ESTABLISH CHEESE FACTORIES IN THE WESTERN RESERVE.

About 1850 attempts were made to establish the factory system of cheese manufacture on the Western Reserve of Ohio. In 1847 an establishment in

²⁹ *Ibid.*, 155.

³⁰ U. S. Patent Office, *Annual Report 1861, Agriculture*, 261.

Trumbull County was said to be manufacturing 1,000 pounds of cheese a day.³¹ In 1849 another factory was reported in operation in Ashtabula County. Others were soon established in adjoining counties. The early factories did not have the milk delivered at the plant, but sent out teams on regular routes, which daily collected the curd from the farm house and hauled it to the factory.³² The factories, however, were apparently unsuccessful; in 1859 they were all reported to have closed down.³³

ORIGIN OF THE ASSOCIATED DAIRY SYSTEM.

The associated dairy system, known as the "American system," which developed during this period, met with better success. Several factories were in operation in Oneida County, New York, in that year and were said to be turning out cheese of superior quality. The development of the system was described by Mr. X. A. Willard, of Herkimer County, New York.³⁴

"The system had been first inaugurated by Jessie Williams, a farmer living near Rome [in Oneida County], and was suggested from mere accidental circumstances. Mr. Williams was an experienced and skillful cheese maker, and at a time when the bulk of American cheese was poor, his dairy, therefore, enjoyed a high reputation, and was eagerly sought for by dealers. In the spring of 1851, one of his sons, having married, entered upon farming on his own account, and the father contracted the cheese made on both farms at seven cents a pound, a figure considerably higher than was being offered for other dairies in that vicinity. When the contract was made known to the son, he expressed great doubt as to whether he should be able to manufacture the character of cheese that would be acceptable under the contract. He had never taken charge of the manufacture of cheese while at home, and never having given the subject that close attention which it necessarily requires, he felt that his success in coming up to the required standard would be a mere matter of chance. His father, therefore, proposed coming daily upon the farm and giving the cheese-making a portion of his immediate supervision. But this would be very inconvenient, and while devising means to meet the difficulties and secure the benefits of the contract, which was more than ordinarily good, the idea was suggested that the son should deliver the milk from his herd daily at the father's milk-house. From this thought sprung the idea of uniting the milk from several neighboring dairies and manufacturing it at one place. Buildings are speedily erected and fitted up with apparatus, which, proving a success, thus gave birth to the associated system of dairying."

Table 58 shows the number of cheese factories erected in New York from 1850 to 1860:

TABLE 58.—*Cheese factories erected in New York State.*^a

Year of erection.	No.	Year of erection.	No.
1851	1	1856	3
1852 .....	..	1857	3
1853 .....	..	1858	4
1854	4	1859	4
1855	2	1860	17

^a U. S. Commissioner of Agriculture, *Annual Report* 1865, p. 433.

³¹ Ohio State Bd. of Agric. *2d Annual Report* (1847), p. 92.

³² *Prairie Farmer*, XII (1852), p. 30.

³³ *Country Gentleman*, XIV (1859), p. 255.

³⁴ U. S. Commissioner of Agric., *Annual Report* 1865, p. 432.

PRODUCTION RECORDS OF DAIRY COWS.

With the increased attention to dairying after 1830, the improvement of dairy cattle or the development of a dairy breed became a popular subject of discussion. The production of the average dairy cow during the period 1840 to 1850 was commonly estimated at 150 pounds of butter or from 300 to 400 pounds of cheese per annum.³⁵ Table 59 shows the performance of several of the most extraordinary cows in Massachusetts previous to 1845:

TABLE 59.
Massachusetts, *Transactions of the Agricultural Societies* 1849, p. 9.

Date.	Name.	Place.	Weekly production of butter.	Length of time.
			<i>lbs.</i>	<i>Weeks.</i>
1824	Nourse cow	Danvers	14	16
1826	Oakes cow .....	....Do.	16	16
1828	Sanderson cow	Waltham	14	16
1830	Hazeltine cow	Haverhill	14	12
1830	Barrett cow	Northampton	15	12
1830	Homer's cow	Bedford	14	12
1845	Buxton cow	Danvers	16	12

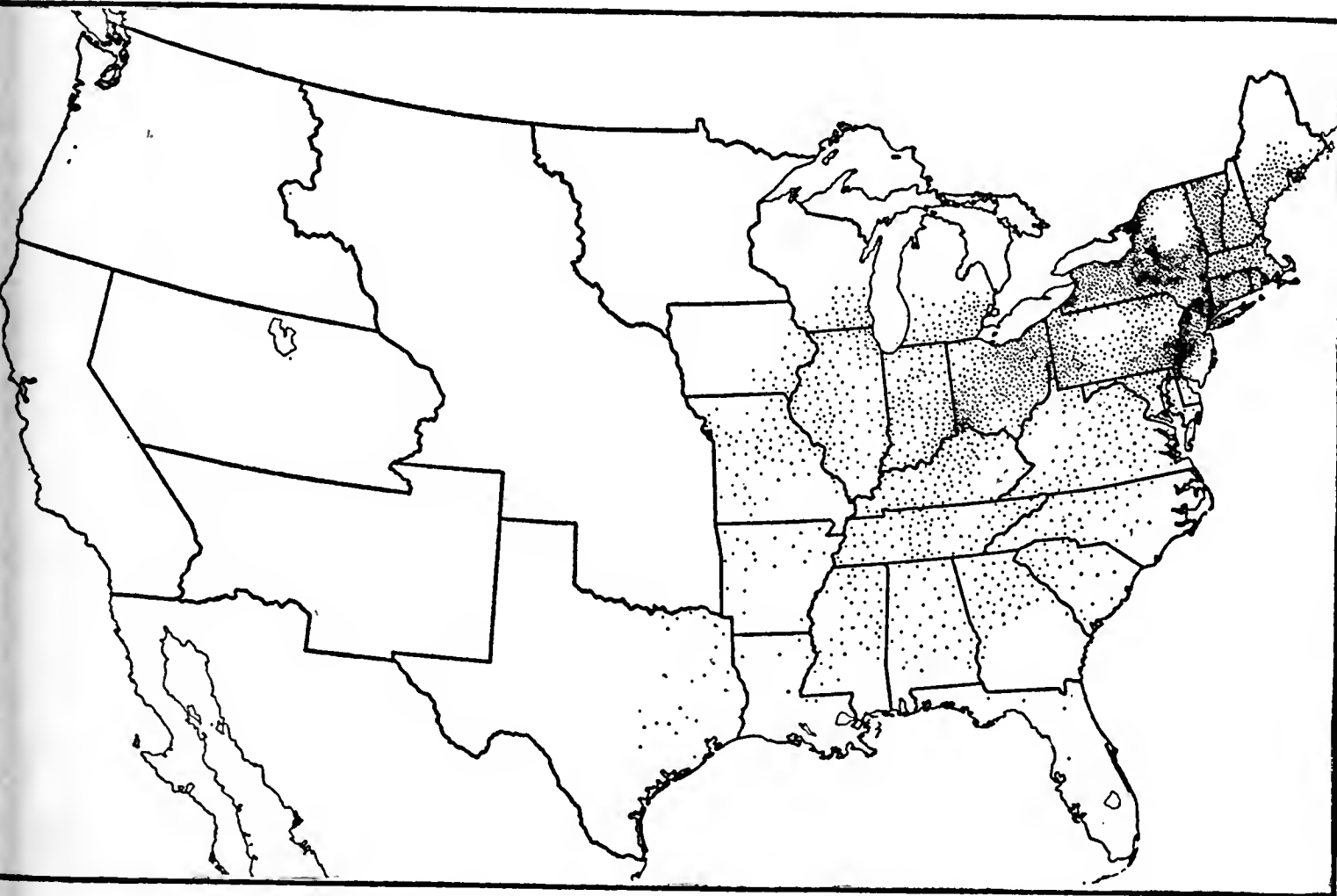


FIG. 103.—Butter, 1849. Each dot represents 100,000 pounds.

The manufacture of butter was more generally distributed than that of cheese. Orange County, New York, central New York, and Delaware County, Pennsylvania, were widely known for the quality and quantity of their butter.

³⁵ U. S. Patent Office, *Annual Report* 1845, p. 995.

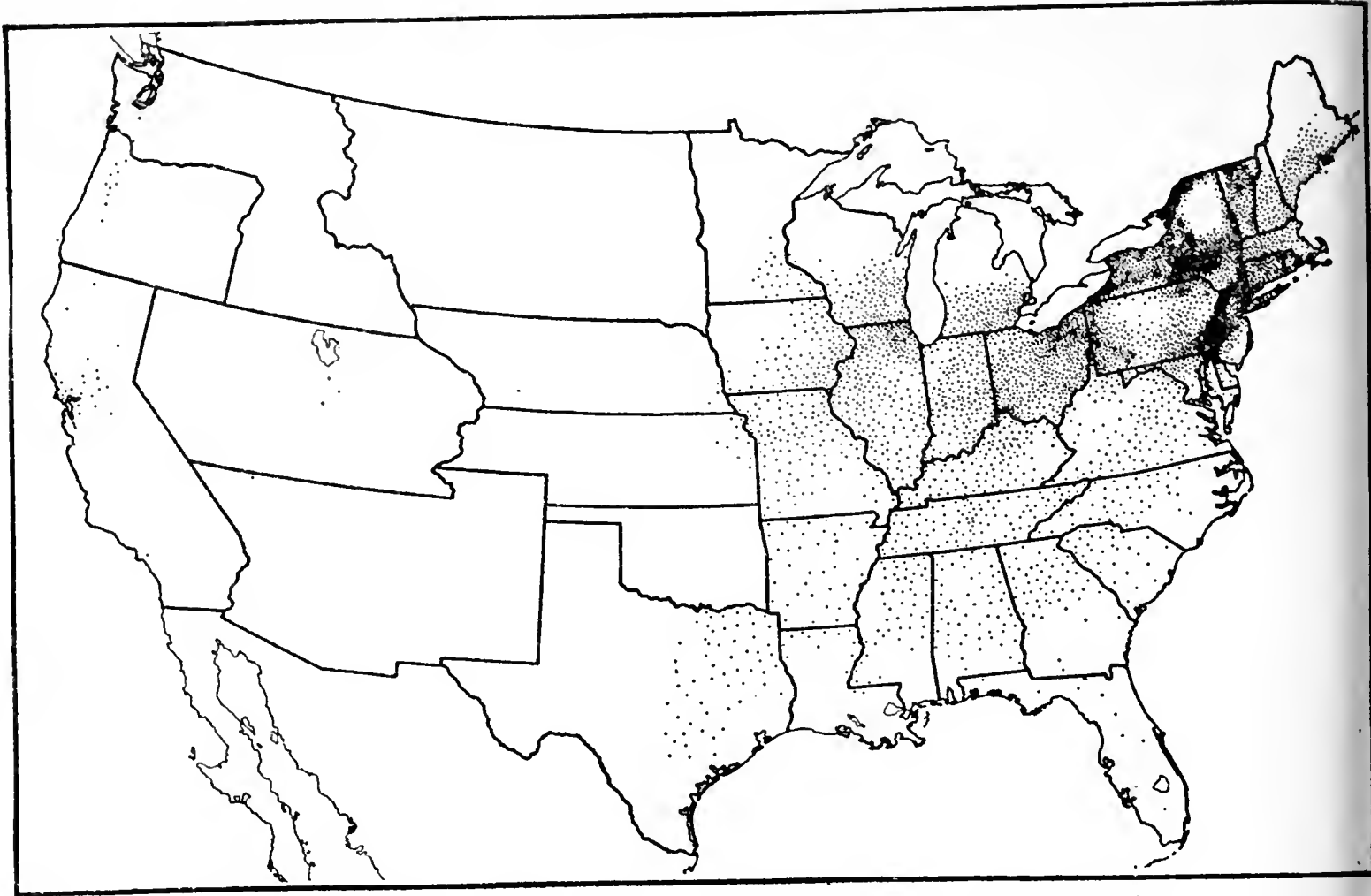


FIG. 104.—Butter, 1859. Each dot represents 100,000 pounds.

From 1850 to 1860 there was a large increase in butter production. West of Ohio there was no important center of butter production.

INTRODUCTION OF NEW BREEDS OF DAIRY CATTLE.

Formerly, in the principal dairy regions of the East, dairymen had raised their own stock; but as the price of dairy produce advanced the practice became prevalent among dairymen of filling up their barns from herds driven in from other counties.³⁶ The Holstein, Jersey, Ayrshire, and other dairy breeds had been introduced before 1840.³⁷ A group of Boston men established a model farm where the "Cream Pot" cattle were developed.³⁸ The Massachusetts Agricultural Society went to considerable expense to promote the Ayrshire and Devon breeds of cattle for dairy purposes in that State.³⁹ It was not until about 1850, however, that much attention was paid to the development of a distinctly dairy type of cattle.⁴⁰

By 1860 most of the leading dairy breeds of the present time had been introduced and herds of cattle with some improved blood were well distributed in the eastern dairy regions. A "dash" of pure blood in the sire was desired by many of the best dairymen. In the Western Reserve, cows were said to be mostly of the native breed, with some mixture of the Shorthorn, Devon, and Bakewell stock; but as a rule little attention had thus far been given to any particular breed. Improvement generally resulted from the retaining by dairymen for their own use of such cows as proved good milkers and the disposal of the others to drovers.⁴¹

³⁶ *Country Gentleman*, XVIII (1861), p. 255.

³⁷ *N. Y. State Agric. Soc. Transactions*, I (1841), pp. 255, 261.

³⁸ *Cultivator*, VII (1840), p. 134; *Country Gentleman*, III (1854), p. 233.

³⁹ *2d Report, Agriculture of Massachusetts* (1838), p. 54.

⁴⁰ *N. H. State Agric. Soc. Transactions* (1852), p. 246.

⁴¹ *Ohio State Bd. of Agric. 4th Annual Report* (1849), pp. 52, 79.

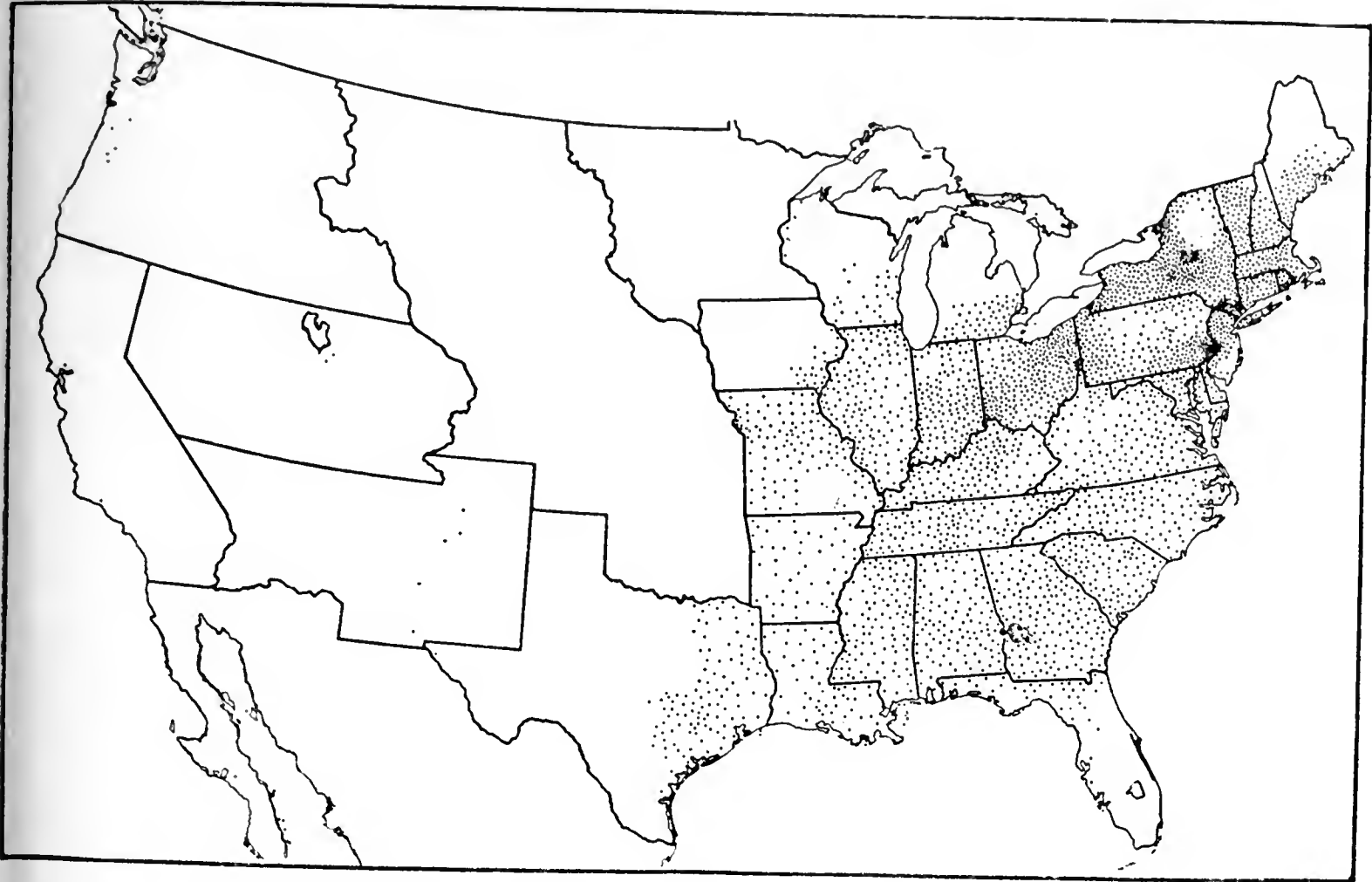


FIG. 105.—Dairy cows, 1850. Each dot represents 2,000 head.

In 1850 the dairy industry was general throughout the agricultural region of the northeast, but showed concentration in the western part of New England, central New York, southeastern Pennsylvania and northeastern Ohio.

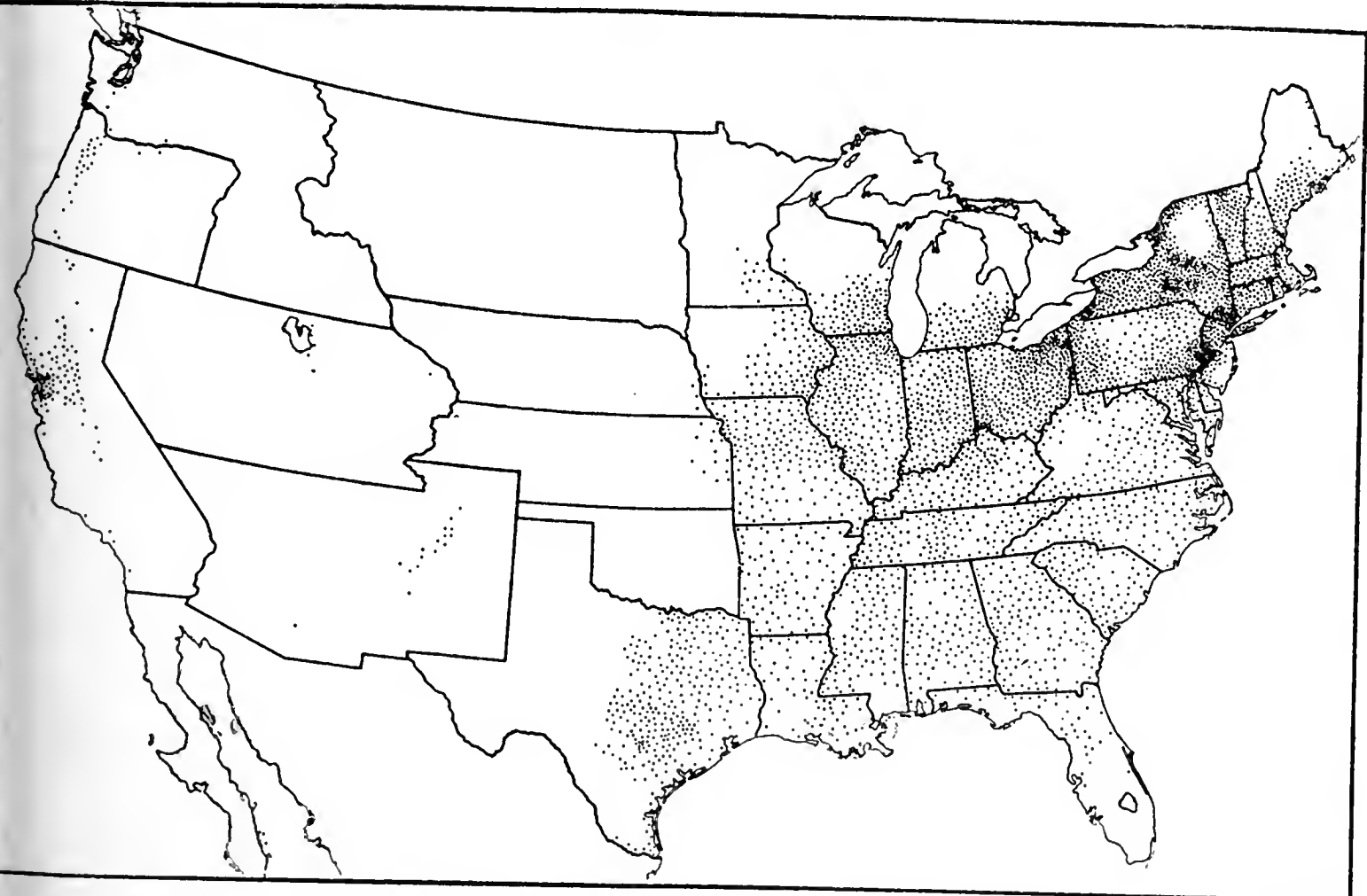


FIG. 106.—Dairy cows, 1860. Each dot represents 2,000 head.

During the fifties the dairy centers of the eastern states continued to develop and expand. West of Ohio there was yet no important dairying center.

TABLE 60.—*Dairy cows: Number in the United States.*

[Source: U. S. Censuses of 1850 and 1860.]

Geographic division and State.	1850.			1860.		
	Total (thousands).	Per 1000 population.	Per cent of U. S. total.	Total (thousands).	Per 1,000 population.	Per cent of U. S. total.
United States	6,385	275	100.0	8,586	273	100.0
Geographic Division:						
New England	608	223	9.5	680	217	7.9
Middle Atlantic	1,580	268	24.7	1,936	260	22.5
East North Central...	1,288	285	20.2	1,945	281	22.7
West North Central..	276	314	4.3	611	282	7.1
Mountain	15	212	.2	47	270	.6
Pacific	14	129	.2	268	604	3.1
New England:						
Maine	134	229	2.1	147	234	1.7
New Hampshire	94	296	1.5	95	291	1.1
Vermont	146	465	2.3	175	554	2.0
Massachusetts	130	131	2.0	144	117	1.7
Rhode Island	19	127	.3	20	113	.2
Connecticut	85	230	1.3	99	215	1.2
Middle Atlantic:						
New York	931	301	14.6	1,124	290	13.1
New Jersey	119	243	1.8	139	207	1.6
Pennsylvania	530	229	8.3	673	232	7.8
East North Central:						
Ohio	544	275	8.5	677	289	7.9
Indiana	285	288	4.5	363	269	4.2
Illinois	295	346	4.6	523	305	6.1
Michigan	100	251	1.6	179	240	2.1
Wisconsin	64	211	1.0	203	262	2.4
West North Central:						
Minnesota	1	100	....	40	235	.5
Iowa	45	238	.7	190	281	2.2
Missouri	230	337	3.6	345	292	4.0
Dakota Territory ....	.....	.....	....	.....	59	....
Nebraska .....	.....	.....	....	7	243	.1
Kansas .....	.....	.....	....	29	266	.3
Mountain:						
New Mexico	10	173	.1	34	368	.4
Utah	5	427	.1	12	297	.2
Nevada .....	.....	.....	....	1	138	....
Pacific:						
Washington .....	.....	.....	....	10	833	.1
Oregon	10	709	.1	53	1,013	.6
California	4	46	.1	205	541	2.4

^a Less than 500.

CHAPTER XXXVI.—SWINE.

The corn-raising regions of Kentucky, Ohio, and Indiana were the centers of commercial swine production in the North in 1840. Cincinnati was the leading pork-packing city of the country. In the corn-growing regions of Ohio, Kentucky, Illinois, and Missouri, hogs were kept in abundance.

HOG-RAISING ON DAIRY FARMS IN THE EAST.

In the East, hogs were generally distributed over the agricultural area, with more or less concentration in the dairy districts. In these districts the usual feed consisted of summer pasture, refuse from the dairy, potatoes, apples, pumpkins, and, towards the close of the period of fattening, a little meal.¹ In Berkshire County, Massachusetts, it was said to be usual to keep 1 hog to 4 cows. In Connecticut it was said that the cheapest method of raising hogs was "to take spring pigs and feed them with the slops of the dairy, with a little provender mixed in, until September; then, in addition, boil the refuse potatoes and apples together, and feed for 6 or 8 weeks; afterwards for a few weeks, with provender scalded."² In the greater part of New England it was said that the cheapest way to raise hogs was to keep just enough to consume the refuse of the farm.

In Herkimer County, New York, to fatten hogs on grain alone was considered questionable economy. The common method pursued was to fatten them on whey, potatoes, apples, grain, etc. In Ontario County, it was said that, since the temperance cause had been in the ascendant, many hogs were fattened on apples. In Putnam County, it was said that "the pork that is made for sale are pigs, fattened or made on the dairy, with but very little grain in fitting them for market."³ In the upper valley of the Hudson hogs were kept in large numbers, and were cheaply raised by pasturing on clover, peas, and oats during the summer. In eastern Pennsylvania, hogs were said to depend mainly for subsistence on the refuse of the dairy, on pasture, and nuts for the summer, and on the stubble fields and large orchards in the fall, until 4 or 6 weeks previous to slaughtering, when they were fed liberally on whole corn.⁴ In Maryland, New Jersey, Delaware, and central Pennsylvania, as well as in the less thickly-settled parts of other eastern States, mast furnished a large part of the food for swine.

CHEAP PORK PRODUCTION IN THE WEST.

In the West, except in the more thickly populated regions, the majority of farmers allowed their hogs to run at large during the greater part of the

¹ 2d *Annual Report, Agriculture of Massachusetts* (1838), p. 74.

² U. S. Patent Office, *Annual Report 1850, Agriculture*, 180.

³ N. Y. State Agric. Soc. *Transactions*, I (1841), p. 154.

⁴ U. S. Patent Office, *Annual Report 1850, Agriculture*, 214; (1849), p. 127.

season. Much of the pork was made without any attention from the owner.⁵ There was as yet but a limited market for hogs, and meat was plentiful. In summer they were fed on pasture and allowed to run in the woods; in winter,

TABLE 61.—Swine: Number in the United States.

[Source: U. S. Censuses of 1840, 1850 and 1860.]

Geographic division and State.	1840.			1850.			1860.		
	Total (thousands).	Per 1000 population.	Per cent of U. S. Total.	Total (thousands).	Per 1000 population.	Per cent of U. S. total.	Total (thousands).	Per 1000 population.	Per cent of U. S. total.
United States	26,301	1,541	100.0	30,354	1,309	100.0	33,513	1,066	100.0
Geographic Division:									
New England	749	335	2.8	361	133	1.2	326	104	1.0
Middle Atlantic ...	3,665	810	13.9	2,309	391	7.6	2,178	292	6.5
East North Central.	5,566	1,903	21.2	6,510	1,439	21.4	8,560	1,236	25.5
West North Central	1,376	3,224	5.2	2,027	2,302	6.7	3,554	1,638	10.6
Mountain .....	.....	.....	.....	8	113	.....	21	118	.1
Pacific .....	.....	.....	.....	33	312	.1	544	1,226	1.6
New England:									
Maine	117	234	.4	55	94	.2	55	87	.2
New Hampshire ...	122	428	.5	63	200	.2	52	159	.1
Vermont	204	698	.8	66	211	.2	53	168	.2
Massachusetts	143	194	.5	81	82	.3	74	60	.2
Rhode Island	31	282	.1	20	132	.1	17	100	.1
Connecticut	132	426	.5	76	206	.2	75	163	.2
Middle Atlantic:									
New York	1,900	782	7.2	1,018	329	3.4	910	235	2.7
New Jersey	261	700	1.0	251	511	.8	236	351	.7
Pennsylvania	1,504	872	5.7	1,040	450	3.4	1,032	355	3.1
East North Central:									
Ohio	2,100	1,382	8.0	1,965	992	6.5	2,252	962	6.7
Indiana	1,624	2,367	6.2	2,264	2,290	7.4	3,099	2,295	9.2
Illinois	1,495	3,140	5.7	1,916	2,250	6.3	2,502	1,462	7.5
Michigan	296	1,394	1.1	206	518	.7	373	497	1.1
Wisconsin	51	1,660	.2	159	522	.5	334	431	1.0
West North Central:									
Minnesota .....	.....	.....	.....	1	121	.....	101	589	.3
Iowa	105	2,433	.4	323	1,682	1.1	935	1,385	2.8
Missouri	1,271	3,313	4.8	1,703	2,496	5.6	2,355	1,992	7.0
Dakota Territory ..	.....	.....	.....	.....	.....	.....	59	.....	.....
Nebraska .....	.....	.....	.....	.....	.....	.....	25	880	.1
Kansas .....	.....	.....	.....	.....	.....	.....	138	1,289	.4
Mountain:									
New Mexico .....	.....	.....	.....	7	119	.....	10	110	.1
Utah .....	.....	.....	.....	1	80	.....	7	167	.....
Nevada .....	.....	.....	.....	.....	.....	.....	4	521	.....
Pacific:									
Washington .....	.....	.....	.....	.....	.....	.....	6	551	.....
Oregon .....	.....	.....	.....	30	2,274	.1	82	1,556	.2
California .....	.....	.....	.....	3	30	.....	456	1,201	1.4

^a Less than 500.

if mast was favorable, they lived in the timber; if not, they were fed a few ears of corn. In the more broken and timbered regions of southern Illinois and Indiana and in Kentucky, most of the pork was made by letting the hogs

⁵ *Prairie Farmer*, III (1843), p. 44; U. S. Patent Office, *Annual Report 1849, Agriculture*, 192.

run at large until nearly 2 years old. About 6 weeks before Christmas they were hunted out of the woods and bottoms, and a dozen or more were put in a rail pen or turned into the nearest corn field to fatten.⁶

HOG RAISING IN THE CORN BELT.

In the corn-growing regions of Kentucky, Ohio, and other western States corn was more commonly used in the feeding of hogs. It was generally conceded that as land was cheap and labor dear in the West, little care could be given to the feeding of hogs. In the bluegrass region of Kentucky, it was common to pasture hogs on clover, rye, or oats during the summer, and in the winter to have them follow the feeding cattle—2 hogs for each full-fed steer or 1 for each half-fed steer.⁷ The practice of “hogging down” corn, turning the hogs into a field of standing corn and allowing them to do their own harvesting, had been prevalent in Indiana, more especially in alluvial districts like that of the Wabash.⁸ “Hogging down” required a minimum of labor, and returned the manure to the soil.

Hogs in the West were usually raised and fattened on the same farm; but in some of the best corn-growing districts, as in the valleys of the Miami and Scioto, feeders purchased lean hogs from farmers living back from the river and fattened them along with the cattle. Cincinnati, located in the center of a large corn-growing and hog-raising region, had become the great hog-packing market of the country. Cincinnati hams were known throughout the East and the South and in foreign markets. Louisville, St. Louis, and other Mississippi points were hog-packing centers.

DECLINE OF SWINE RAISING IN THE EAST, 1840 TO 1850.

The census of 1850 showed that the number of hogs in the country had increased from 26,301,000 to 30,354,000 during the previous decade. Every northern State east of Ohio showed a considerable decrease in number of hogs. In New England, the decline was over 50 per cent—from 749,000 to 348,000. In New York, the rate of decrease was little less. In Ohio, the number of hogs was nearly the same as in 1840. To the westward, on the other hand, every State showed a considerable increase. The centers of production were much the same as in 1840. Hogs had obviously become more numerous in the corn-growing and newly-settled region of the West, and less numerous in the dairy regions of the East (see figs. 107, 108).

The causes of the decline of swine-raising in the East received but slight attention in the current literature of the day. A writer in Worcester County, Massachusetts, in 1850, noted a 25 per cent decrease in the number of hogs in that State in the preceding decade, resulting from increased demand for corn for feeding to cows and from the loss of the dairy waste, now that whole milk was marketed.⁹ A New Hampshire writer in 1852 told of a large decrease

⁶ *Prairie Farmer*, VIII (1848), p. 52.

⁷ Beatty, *Essays on Practical Agriculture*, 268.

⁸ U. S. Patent Office, *Annual Report 1853, Agriculture*, 51.

⁹ *Ibid.*, 1850, *Agriculture*, 273.

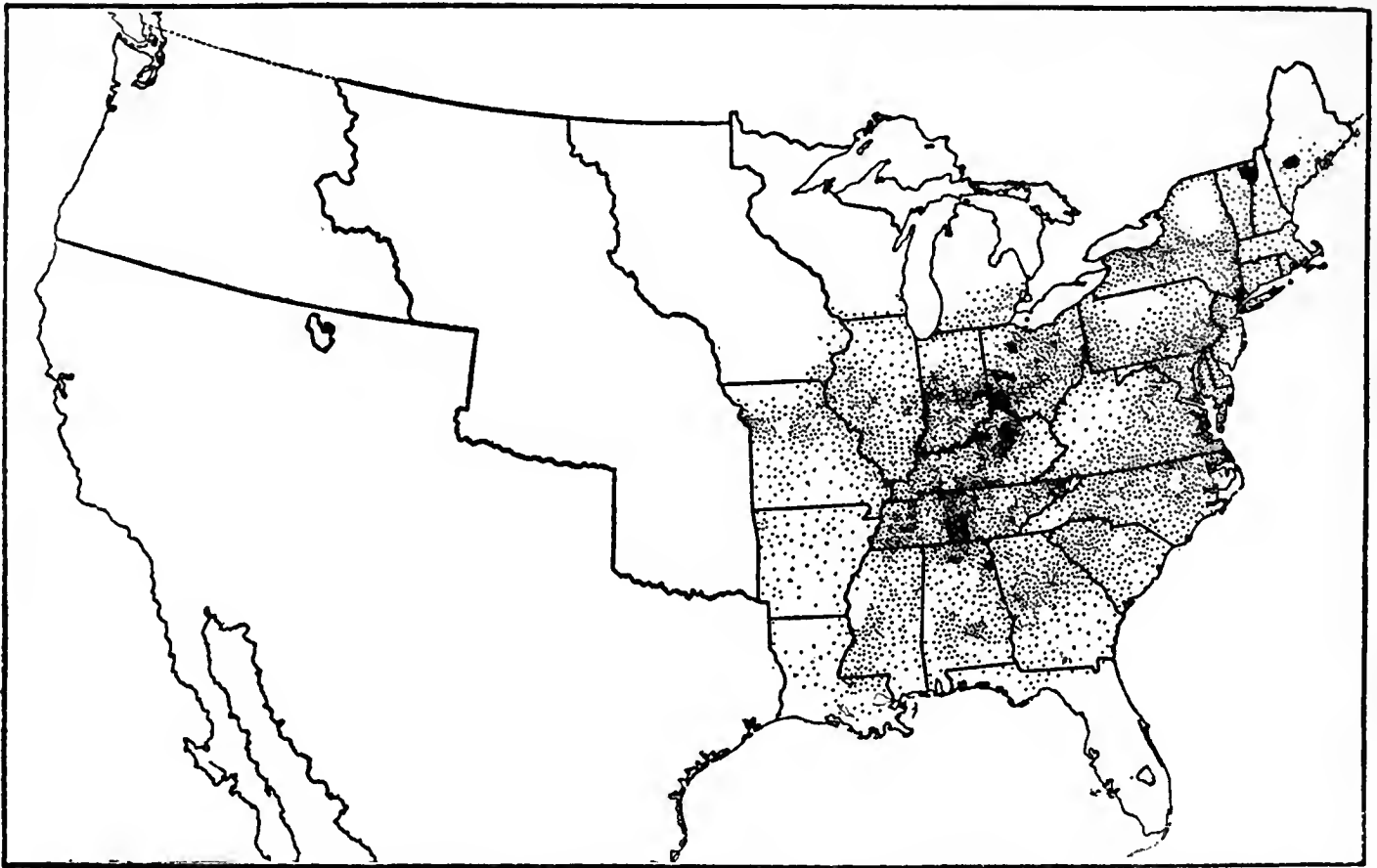


FIG. 107.—Swine, 1840. Each dot represents 5,000 head.

Swine were an important source of income in the East in 1840. In the West cheap corn, abundant mast and free range made the production of pork very cheap.

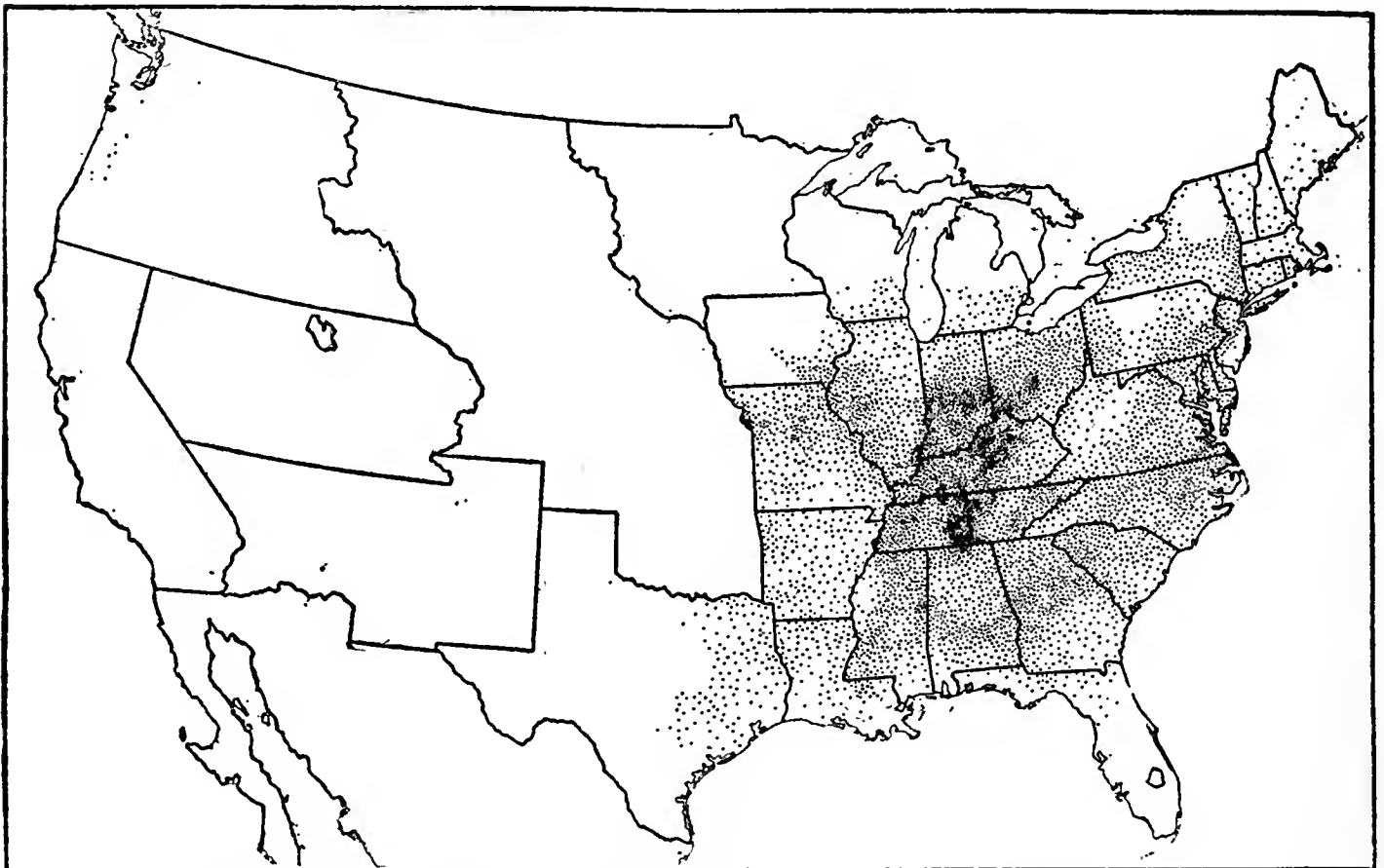


FIG. 108.—Swine, 1850. Each dot represents 5,000 head.

During the forties the number of swine declined in every northern state east of Ohio. In the West there was a small increase. Swine were especially numerous in the corn region of the Ohio valley.

in hog-raising in most sections of that state during the preceding 15 or 20 years, which he explained as follows: ¹⁰

“The average price of corn, oats and potatoes has been for many years past too high to allow their being profitably fed to swine. . . . It seems to be conceded by our people generally that with the price of corn for a number of years past, and with the breeds of hogs which have usually been kept, that we can not successfully compete with the Western farmers in pork-raising.”

Another writer on New England agriculture in 1861 observed: ¹¹

“The number of swine raised, and the quantity of pork made in New England, is far less than formerly. The high price of grain here, and the ease with which the still-slop-fed hogs of the West are rushed from the Mississippi to the Atlantic, have rendered the raising of hogs for market generally an unprofitable undertaking. Salt pork is not made the unvarying staple upon the farmer's table as it formerly was, although still a most important element in New England housekeeping. The thicker settling of the country, and the more frequent interspersions of villages, leads to a more general distribution of fresh meats, so that the farmers are not now, as formerly, so entirely dependent on the meat of their own killing and their own pork barrels.”

In summary, it appears that the causes of decline of hog-raising in the East were: (1) in the increased attention to dairying; (2) the importation of western pork; (3) the general improvement in the New England field system. In addition, the supply of potatoes, one of the chief feeds for the eastern hogs, had been cut in half since the appearance of the blight. Corn and other grains had risen in value. Dairying gave a better return for the time and feed expended; 6 cents per pound was the commonly estimated cost of pork production in the East in 1850; in the West but 2 to 2½ cents.

PORK PACKING AT CINCINNATI.

In the West the increase in the number of hogs from 1840 to 1850, although large, was not in proportion to the increases in population and in corn production. During the decade the business of packing hogs had extended to nearly all the interior towns of any considerable size which lay near means of transportation.¹² In Cincinnati, the packing center, there were no less than 13 factories for the conversion of lard into oil and stearin in full operation in 1843, making from 300 to 2,500 barrels each or 100,000 gallons in all.¹³ In 1849 it was estimated that 16,000,000 pounds of pork would be run that year into lard oil. 1,500 coopers in the city and the neighborhood were engaged in making kegs, pork barrels, and bacon hogsheads. Many of them were farmers who spent their spare time at cooperage or in getting out hoop poles.¹⁴

Unlike cattle, hogs could not profitably be driven long distances. They were generally fattened where raised and were driven to market or sold to drovers who traveled through the country. In Indiana, 100 to 200 hogs were ordinarily fattened by hog-raising farmers. In many corn-growing regions in the vicinity of navigable rivers it was not considered profitable to feed corn to hogs. Farmers within 12 or 15 miles of rivers could not compete with those

¹⁰ N. H. Agric. Soc. *Transactions* (1852), p. 254.

¹¹ U. S. Patent Office, *Annual Report* 1861, *Agriculture*, 260.

¹² Ohio State Board of Agric., *4th Annual Report* (1849), p. 13; *Prairie Farmer*, X (1850), p. 166.

¹³ U. S. Patent Office, *Annual Report* 1843, p. 118.

¹⁴ *Prairie Farmer*, IX (1849), p. 14.

in the interior where, because of distance from market, corn was cheaper.¹⁵ It was the opinion of the *Prairie Farmer* in 1848 that pork-making at a distance of 50 miles from market was more profitable at \$2 a hundred than raising wheat at 80 cents a bushel.¹⁶

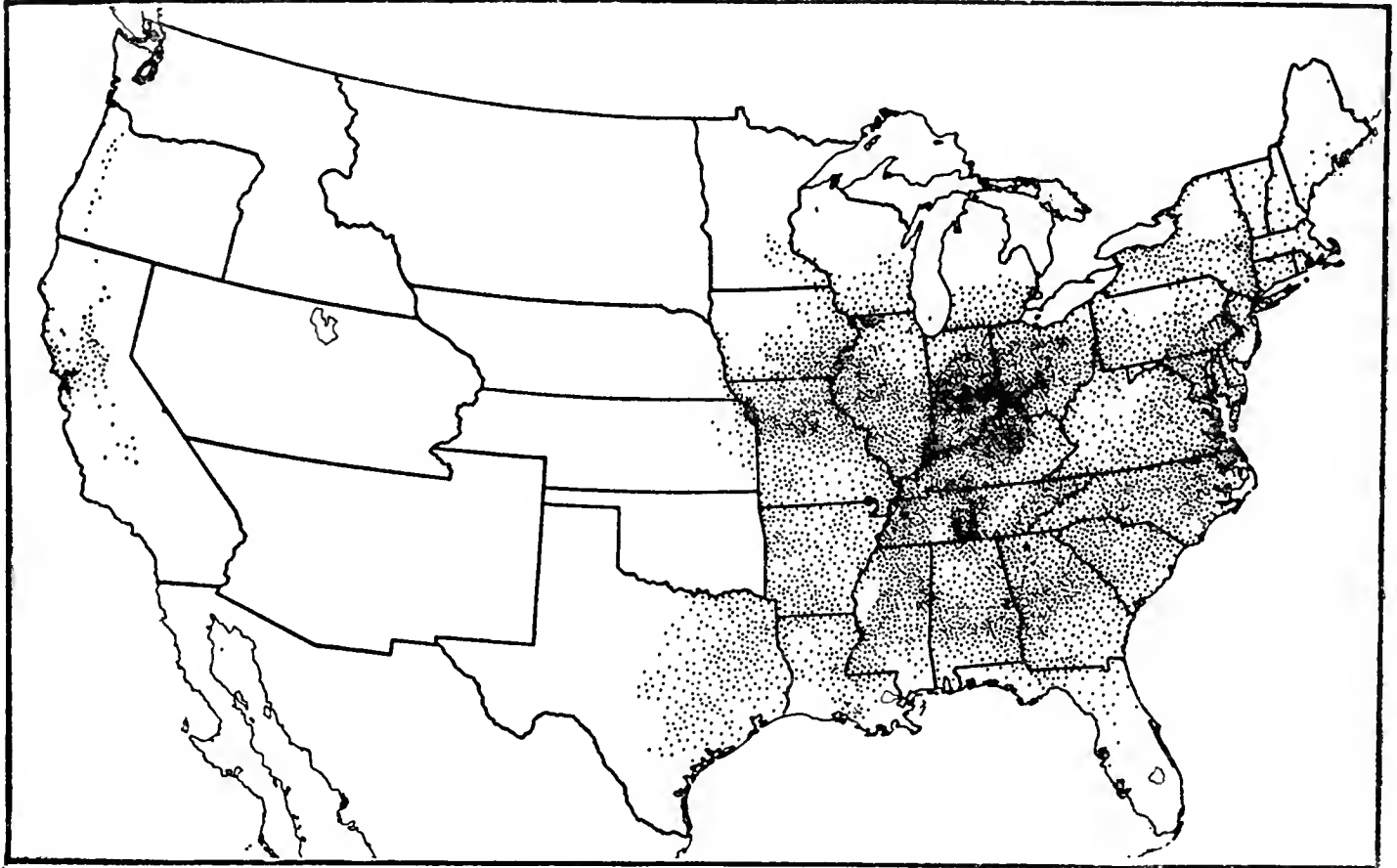


FIG. 109.—Swine, 1860. Each dot represents 5,000 head.

During the fifties the center of increase lay in the region of the Mississippi river and to a less extent on the Pacific coast.

CORN AND HOGS IN THE WEST, 1850 TO 1860.

The census reported an increase in the number of swine from 30,354,000 in 1850 to 33,573,000 in 1860. All northern states East of Ohio, with the exception of Maine and Maryland, showed a slight decline. In the West there was an increase, which, however, was not in proportion to the increase in population or in corn production. As the extension of railroads through the corn-growing region opened up new markets, the price of corn greatly advanced and swine-raising moved further inland, where corn was cheap. Of the 1859 corn crop, over 15,000,000 bushels were shipped to Chicago alone.¹⁷ In the regions nearer to market, or nearer to means of transportation, more care was now taken in the feeding of swine.¹⁸ It is said that 3,000,000 hogs were packed in the year 1860.¹⁹

TYPES OF HOGS.

Improved breeds of swine and their crosses were fairly common in the eastern States in 1840. The Chester County type, which had been developed

¹⁵ *Ibid.*, VII (1847), p. 304.

¹⁶ *Ibid.*, VIII (1848), p. 88.

¹⁷ Chicago Board of Trade, *9th Annual Report* (1867), p. 43.

¹⁸ Ohio State Board of Agric., *14th Annual Report* (1859), p. 193.

¹⁹ U. S. Census of 1860, *Agriculture*, p. cxxxv.

in Chester County, Pennsylvania, and the Berkshire were coming into favor. The early prejudice which had existed against the latter on account of its small size and color was gradually subsiding. It was said in Massachusetts that a shoat weighing 70 pounds in the spring and kept on the slops of the dairy and on pasturage, supplemented by some meal, was expected to weigh 250 pounds in the fall. Adam Beatty, of Kentucky, wrote in 1844 that a hog which followed full-fed cattle would gain 1 pound a day.²⁰ Besides the Berkshire and the Chester County hogs, other breeds which were introduced or developed previous to 1840 were the Warren County, Byfield, Woburn, Irish Grazier, China, Grass-breed, Russian, Suffolk, Essex, etc. \$200, \$300, and even \$500 had been paid for a pair of Berkshire hogs.²¹

THE COMMON HOG IN THE WEST.

In the West, before 1840, but little attention had been given to the type of hog used for feeding.²² The common hog was of an ungainly type, with long legs and snout, a sharp back, of a roaming disposition, slow and expensive to fatten.²³ For the packers they yielded small hams and little lard; their sides were too thin for mess or clean pork and chiefly fit for bacon. The type was variously known as "Alligator," "Landpike," "Razorback," "Prairie Rooter," "Seven-mile," "Hazlenut splitter," etc. For the existence that they were forced to lead they were well adapted. About 1840, however, there was so much talk about the breeds of hogs that it was said, "a stranger would have thought that the only business of the country hereafter was to be pork raising."²⁴ It was still considered necessary, however, by most farmers to cross the improved breeds with a good traveling breed so as to enable them more readily to feed upon the mast or pasture, and to give them endurance when driven to market.

CHANGING STANDARDS FOR HOG BREEDING.

In the early attempts to improve the breeds, a common aim had been to obtain large-sized animals. A breed was appraised according to the weight which it could be made to attain, rather than by the profit with which it could be fattened for the butcher.²⁵ By 1840, however, breeders were giving increased attention to those breeds which, with a given quantity of food, would lay on the most meat. In the West, in 1850, it was generally considered not profitable to winter a hog more than one season. Hogs were commonly sold at about 18 months of age at a weight of 200 to 250 pounds. The average weight of hogs received on the Chicago market from 1852 to 1860 was 228 pounds.²⁶ By 1860 the long-legged razor-backed hog had nearly disappeared from the corn-growing region of Ohio, Indiana, and Illinois. Probably in no one other class of livestock was improvement so rapid during this period as in swine.

²⁰ Beatty, *Essays on Practical Agriculture*, 268.

²¹ *Cultivator*, VI (1839), p. 31.

²² *Ibid.*, VII (1840), p. 167.

²³ *Ibid.*, I (1834), p. 5.

²⁴ *Prairie Farmer*, IV (1844), p. 251.

²⁵ *Cultivator*, VI (1839), p. 31.

²⁶ Chicago Board of Trade, *3d Annual Report* (1860), p. 38.

CHAPTER XXXVII.—POULTRY.

The census of 1840 reports the value of "all kinds of poultry" at \$9,344,000; the number, however, was not given. New York State led with poultry valued at \$1,153,000, Pennsylvania second with \$686,000. Although the production of eggs was largely a side issue on the farm, poultry-raising had become fairly well developed in a few sections of the East. Rhode Island was celebrated throughout the country for its fine poultry. In Washington County, Rhode Island, all the farmers were said to be engaged more or less extensively in the business.¹

The egg trade of Cincinnati in 1845 was described as follows:²

"The egg trade of Cincinnati bids fair to rival the celebrated pork trade of that city, to an extent which will soon sink the soubriquet of Porkopolis to that of Eggopolis. It is, indeed enormous—beyond computation. One firm alone (Townsend & Co.) during the first six months of this year, shipped to New York 234 barrels of eggs; to Baltimore, 70 barrels; and to New Orleans, 3,976 barrels! Each barrel contains 90 dozen; which makes the aggregate shipments 4,624,400 eggs! . . . There are five other houses in Cincinnati engaged in the business. The foreign egg trade of Cincinnati the past year has amounted to 10,700 barrels; which is 963,000 dozen, or 11,556,000 eggs! The aggregate value of this trade for the year, according to data here given, is \$90,361.50. The business is a very hazardous one, owing to the great fluctuations in the New Orleans market. In the course of the past year, for example, western eggs have sold there as high as \$22 per barrel, and as low as \$3. In addition to this export trade, these establishments do also a heavy home trade. That of Townsend & Co. supplies regularly five steamboats with 36 barrels a trip; which, at 12 trips a year, is 432 barrels. It also furnishes constantly the consumption of several of the largest hotels, which use at least 260 barrels per year, and does a retail business amounting to not less than 33 barrels per year. These several amounts make 725 barrels to add to the 4,280 barrels shipped, which gives an aggregate of 5,005 barrels, or 450,450 dozen, as the annual trade of this one house. Besides this, the annual city consumption is estimated at 1,213,333 dozen."

As the railroads were extended new markets were opened for poultry products. In 1851 it was reported from Elgin, Illinois, that a trader had established himself in that city,³

"where he carried on an extensive business this season, and perhaps made more money than any of our heavy merchants. His sole business is buying poultry, eggs, butter, vegetables, etc., from the farmers and sending them by railroad to the city where they are quickly disposed of. We are informed that he has paid more money to the company for freight this season than any other single firm doing business with the railroad."

¹ U. S. Patent Office, *Annual Report* 1849, *Agriculture*, 98; 1850, p. 477.

² *Ibid.*, 1845, p. 349.

³ *Prairie Farmer*, XI (1851), p. 33.

CHAPTER XXXVIII.—HORSES AND MULES.

TYPES OF HORSES RAISED IN NEW ENGLAND, IN OHIO, AND IN KENTUCKY.

Vermont, and to a less extent New Hampshire, had long been celebrated for their excellent horses of the Morgan breed, distinguished by "activity and great strength in proportion to size, ability to live and labor on comparatively little food, with remarkable hardiness and endurance."¹ It was reported from Massachusetts in 1849 that the best and most beautiful animals of that

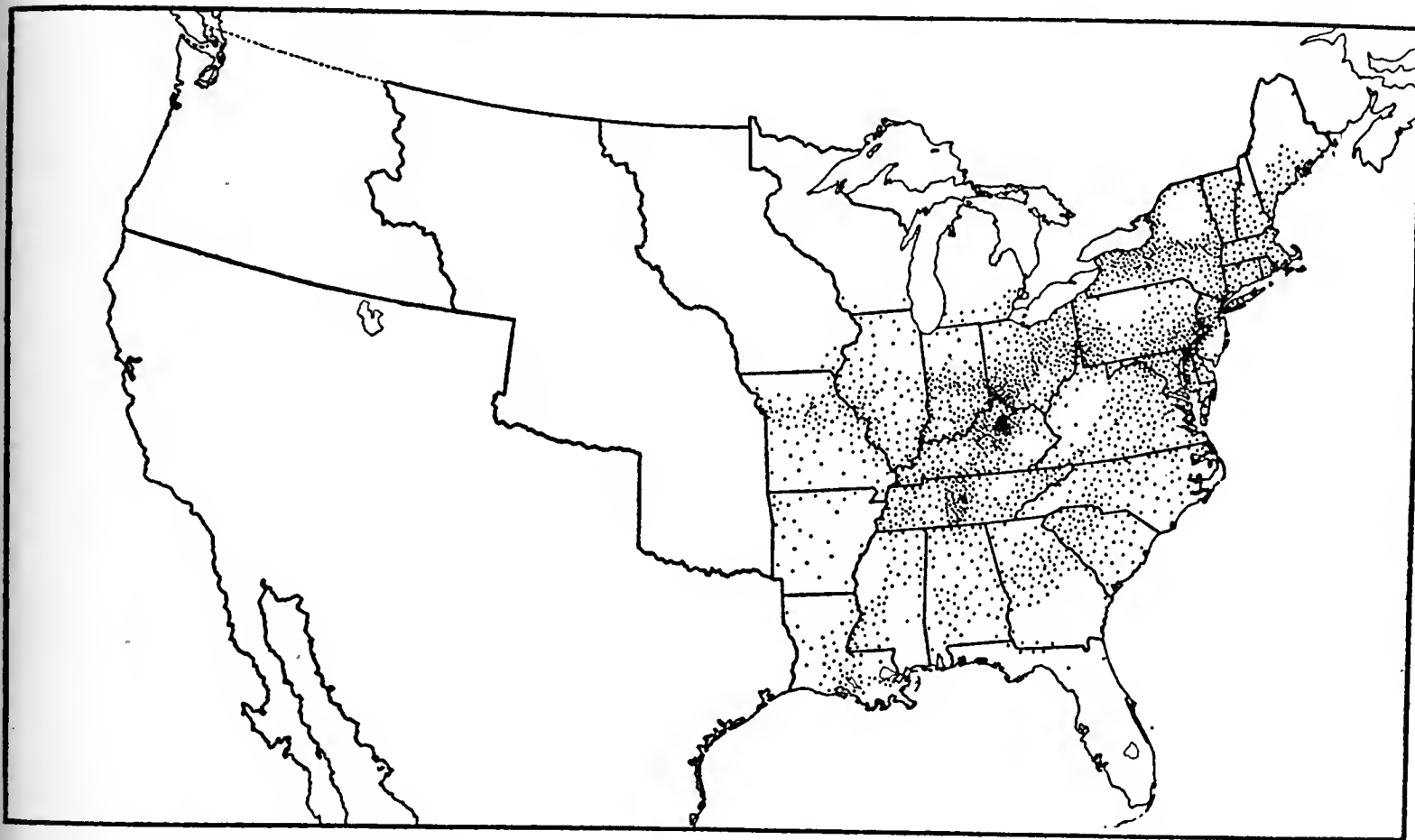


FIG. 110.—Horses, mules, asses, and burros, 1840. Each dot represents 2,000 head.
Horses were uniformly distributed throughout the North.

State were from Vermont and New Hampshire. Many of the heavy horses used in the East, however, were secured from Ohio and other Western States. Eastern drovers were going West into Ohio or into the mining districts of Pennsylvania to secure heavy draft horses to supply the eastern demand.² From Delaware County, Pennsylvania, in 1849, it was reported that about one-half of the horses in the county were raised on the farm and the remainder were procured from Ohio and other western states.³

¹ *Cultivator*, new series, II (1845), p. 256.

² U. S. Patent Office, *Annual Report 1854, Agriculture*, 27.

³ *Ibid.*, 1849, *Agriculture*, 126.

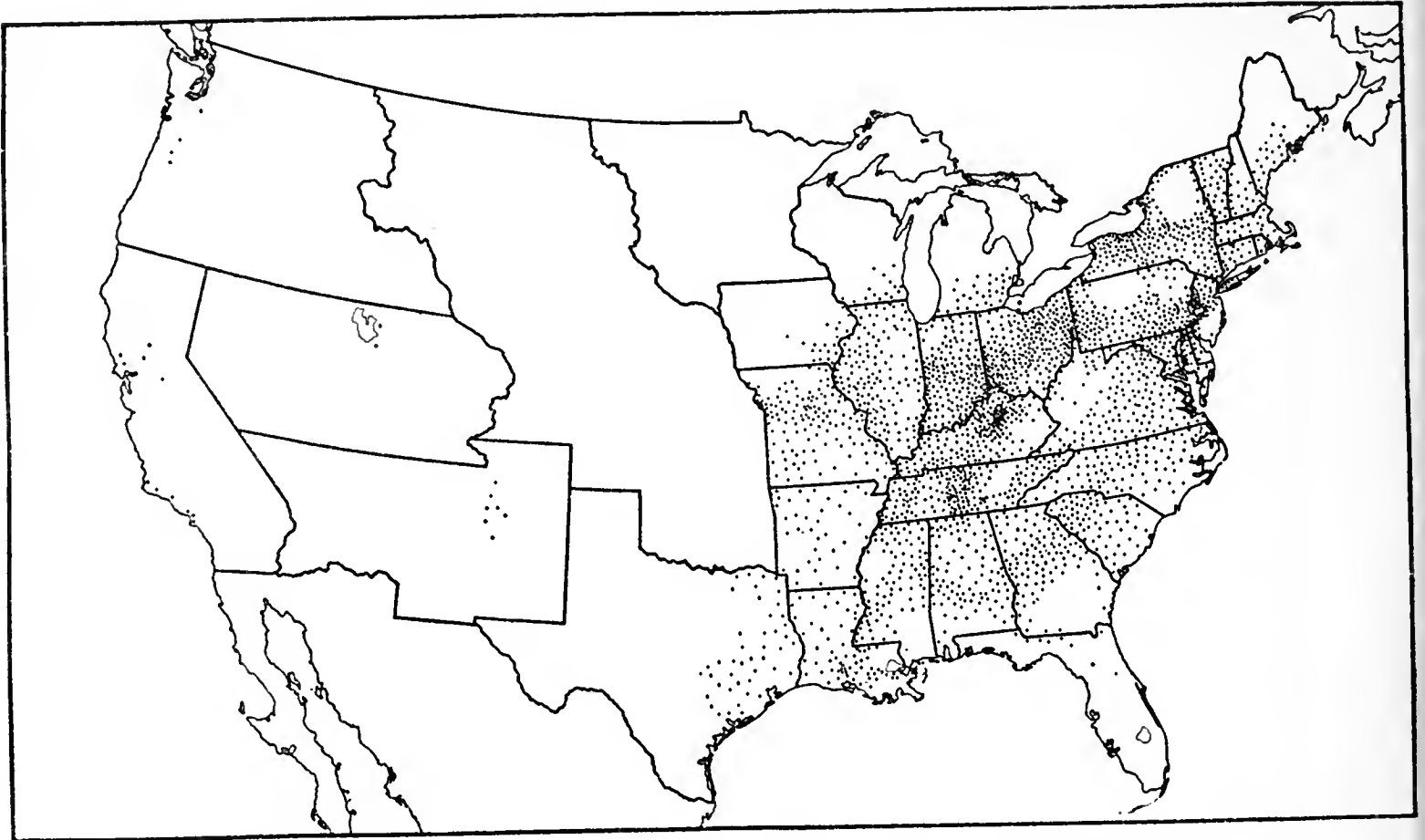


FIG. 111.—Horses, mules, asses, and burros, 1850. Each dot represents 2,000 head. There was a comparatively small increase in the number of horses between 1840 and 1850.

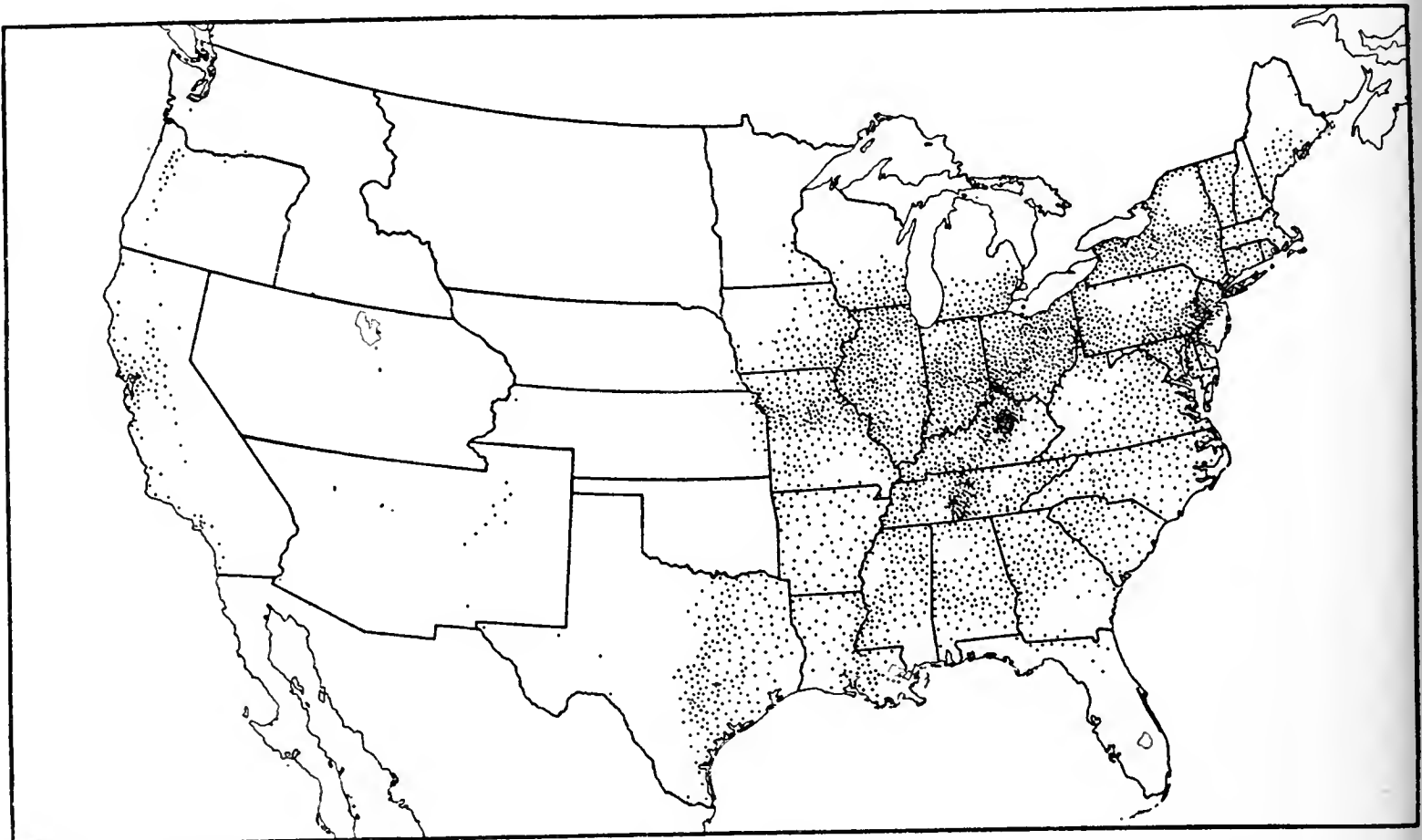


FIG. 112.—Horses, mules, asses, and burros, 1860. Each dot represents 2,000 head. During the fifties there was a considerable increase in the number of horses, especially in the West.

During the period 1840 to 1860, Kentucky was distinguished for the breeding of saddle and light horses. In 1834 Mitchell reported: ⁴

"A handsome horse is the highest pride of a Kentuckian, and common farmers own from 10 to fifty. Great numbers are carried over the mountains to the Atlantic states; and the principal supply of saddle and carriage horses in the lower country is drawn from Kentucky or other western states."

TABLE 62.—Horses and mules: Number in the United States.

[Source: U. S. Censuses of 1840, 1850 and 1860.]

Geographic division and State.	1840.			1850.			1860.		
	Total (thousands).	Per 1000 population.	Per cent of U. S. total.	Total (thousands).	Per 1000 population.	Per cent of U. S. total.	Total (thousands).	Per 1000 population.	Per cent of U. S. total.
United States	4,336	254	100.0	4,896	211	100.0	7,400	235	100.0
Geographic Division:									
New England	270	121	6.2	213	78	4.3	259	83	3.5
Middle Atlantic	910	201	21.0	869	147	17.7	1,038	139	14.0
East North Central	907	310	20.9	1,155	255	23.6	2,039	294	27.6
West North Central	207	485	4.8	307	349	6.3	668	308	9.0
Mountain				16	226	.3	27	157	.4
Pacific				32	301	.7	207	466	2.8
New England:									
Maine	59	118	1.4	42	72	.9	61	97	.8
New Hampshire	44	154	1.0	34	108	.7	41	126	.6
Vermont	62	214	1.4	62	195	1.2	69	219	.9
Massachusetts	62	83	1.4	42	42	.9	48	39	.6
Rhode Island	8	74	.2	6	42	.1	7	41	.1
Connecticut	35	112	.8	27	73	.5	33	72	.5
Middle Atlantic:									
New York	475	195	11.0	448	145	9.1	505	130	6.8
New Jersey	70	189	1.6	68	139	1.4	86	128	1.2
Pennsylvania	365	212	8.4	353	153	7.2	447	154	6.0
East North Central:									
Ohio	431	283	9.9	467	236	9.5	633	270	8.6
Indiana	241	351	5.6	321	325	6.6	550	407	7.4
Illinois	199	418	4.6	278	327	5.7	602	352	8.1
Michigan	30	142	.7	59	147	1.2	137	183	1.9
Wisconsin	6	185	.1	30	99	.6	117	151	1.6
West North Central:									
Minnesota				1	144		17	101	.2
Iowa	11	250	.3	39	204	.8	181	268	2.4
Missouri	196	511	4.5	267	391	5.5	443	375	6.0
Dakota Territory							^a 21		
Nebraska							5	171	.1
Kansas							22	204	.3
Mountain:									
New Mexico				13	223	.3	21	228	.3
Utah							5	134	.1
Nevada				3	242		1	98	
Pacific:									
Washington							5	425	.1
Oregon				9	637	.2	38	720	.5
California				23	253	.5	164	432	2.2

^a Less than 500.

⁴ United States, 296.

But few heavy horses were bred in Kentucky; these were obtained chiefly from Ohio and Indiana.⁵

The wheat region of western New York, eastern Ohio, and, during the last half of the period, Michigan, were horse-raising districts. It was reported in 1849 that 2,500 horses were annually exported from Ashland County, Ohio.⁶ The expense of driving horses from Harrison County, Ohio, to markets on the Atlantic seaboard in 1854 was said to be about \$10 a head.⁷ Before 1849 the market for western horses had been largely in the East and South, supplemented by the ever-present demand of western immigrants. But migration to California after 1849 increased the demand for horses in that direction. It was estimated that during the year 1852 at least 6,000 horses left the State of Michigan for the California gold mines.⁸

CONFLICTING STANDARDS IN BREEDING—SPEED VS. STRENGTH.

In the agitation for improved breeds of farm animals, horses attracted their share of attention. It was regarded as a question, especially in the Eastern States, what direction the improvement might best take. Should the farmer breed for a race horse, a trotter, a coach, or a plough horse?⁹ The time had been when "an awkward, a dull, or even an unsound animal, provided he was good for draught, would find his way to some of the numerous teams that traversed the country, and bring a fair price"; but now, since railroads were doing an increased amount of the long hauling, the demand for such horses was less.¹⁰ The same reasons which were doing away with oxen were causing an increased demand for better horses. Improved English draft horses were introduced to a considerable extent, but too frequently improvement aimed at the breeding of fast horses rather than draft animals.

In the Eastern States there seemed to be a mania for speed, an ambition to keep up with the railroads.¹¹ One observer writes:

"Fifty years ago, when there were no railways in the country and not very good highways, before the building and using of light wagons and other vehicles, when the principal uses of the horse were to drag a lumbering coach six miles an hour—as fast as it was safe to go—to haul before cattle, to draw the farmer's family to meeting once a week and his grist to mill twice a week, there was small occasion for endeavoring to improve the breeds of horses in this country. Now the times have changed and we have changed with them; railway travelling makes us seek railway speed, or the nearest approach that we can get, with horseflesh; horses with speed are indispensable as roadsters, and in horses for all work at the present day good travelling qualities are sought."

Horse racing at the agricultural fairs was introduced during this period.

⁵ *Western Farmer*, II (1841), pp. 249, 251; Indiana State Board of Agric., *2d Annual Report* (1852), pp. 121, 298.

⁶ Ohio State Board of Agric., *4th Annual Report* (1849), p. 48.

⁷ U. S. Patent Office, *Annual Report 1854, Agriculture*, 26.

⁸ *Ibid.*, 1852, *Agriculture*, 277.

⁹ N. Y. State Agric. Soc. *Transactions*, I (1841), p. 303.

¹⁰ Massachusetts, *Transactions of the Agricultural Societies 1849*, p. 221.

¹¹ U. S. Patent Office, *Annual Report 1861, Agriculture*, 255.

RAISING HORSES ON THE ILLINOIS PRAIRIE.

It was said that good horses could be raised on the wild prairie of Illinois for \$10 a year.¹² Large droves were taken from southern Illinois and Missouri to St. Louis, New Orleans, and other southern markets. There was much objection to their small size, the result of a large mixture of Spanish blood. On the Pacific Coast the horses were largely the Spanish breed, numerous bands of which roamed the country. The breed was slowly improved by crossing with horses brought in by easterners.¹³

Higher prices after 1847 tended to promote the raising of horses in the Eastern States. The movement from the West to the East and to the South continued, supplemented by an increased demand from the Pacific Coast. Before 1850 but few determined attempts had been made to improve the draft horse, but after that date the importation and improvement of draft horses attracted greater attention, particularly in Ohio.¹⁴

MULE BREEDING IN KENTUCKY AND MISSOURI.

Kentucky, Missouri, and the region around the city of Columbus, in Ohio, were the chief mule-breeding districts of the northern States in 1850.¹⁵ Following the importation by Henry Clay of a jack from Spain in 1832, the mule had been much improved in Kentucky.¹⁶ In 1853 mules were considered the most profitable stock raised in the bluegrass region.¹⁷ The mule-raisers on the good grazing lands of Kentucky were in the habit of sending jacks into the farming districts of Ohio, Indiana, and other sections of Kentucky. The mule colts which were raised there in small numbers by individual farmers were purchased by the grazier at the age of about 6 months, and taken back and grazed in Kentucky. At maturity they were sold to the plantations of the South¹⁸ or to the coal mines of the East. So common was this practice that prices were commonly quoted for a 6-months-old colt, and then for a 2 or 3 year old mule.¹⁹

The region around Columbus, Ohio, was famous for the fine quality of its mules. It was reported in 1844 that one breeder in Columbus sold annually from his farm 200 to 300 mules, most of which went to the Baltimore market. Missouri mules were chiefly marketed in the South, and, after 1849, in California and Oregon.²⁰ Throughout southern Indiana, Illinois, and Iowa a few mules were raised, for farm use and for sale in the South.²¹

¹² U. S. Patent Office, *Annual Report* 1854, *Agriculture*, 23.

¹³ *Ibid.*, 1861, p. 164.

¹⁴ Plumb, *Types and Breeds of Farm Animals*, 106.

¹⁵ *Country Gentleman*, IV (1854), p. 297; *Cultivator*, new series, I (1844), p. 149.

¹⁶ Plumb, *Types and Breeds of Farm Animals*, 162.

¹⁷ U. S. Patent Office, *Annual Report* 1853, *Agriculture*, 29.

¹⁸ *Ibid.*, 1849, p. 179.

¹⁹ *Ibid.*, 1854, p. 24; (1853), p. 30.

²⁰ *Cultivator*, new series, IX (1852), p. 370.

²¹ U. S. Patent Office, *Annual Report* 1854, *Agriculture*, p. 24.

CHAPTER XXXIX.—NORTHERN AGRICULTURE IN 1860—A SUMMARY.

The prominent feature in the history of northern agriculture from 1840 to 1860 was its dynamic nature. It was a period of expansion and reorganization. In the West, expansion was stimulated by the presence of prairie lands. The development of commercial agriculture in the prairies was stimulated by, and partly responsible for, the invention of farm machinery and the construction of railways to carry the surplus products of the farms to the eastern markets. In the East it was a period of reorganization, made necessary because of (1) the competition of the factories and of western farms for the rural population; (2) the competition from the western farmers in the production of agricultural staples such as wheat, wool, beef, and pork; (3) the increased demand of the eastern cities for dairy products, garden truck, and hay, articles which, either because of their bulk or perishable character, were not shipped from the West in competition with the eastern farmer; and (4) the improvement in farm machinery and transportation.

THE CAUSES OF WESTWARD MIGRATION.

In the East the frontier of agricultural production was still being slowly pushed north into northern New England and New York, and into the unoccupied lands of Pennsylvania. But the movement was slow and was entirely overshadowed in importance by the movement of eastern people to the prairie lands of the West. To hew a farm from the remaining untilled lands of the East was a long and arduous task, and to purchase a farm already cleared and improved required not a small investment. It was not strange, therefore, that the hardships and pleasures of a pioneer life in the West seemed more desirable than the labor and saving necessary to acquire a farm in the East. While settlement, in its progress westward, was moving through a rough and wooded region, the task of clearing a farm in the West was perhaps as difficult as buying a farm in the East. But now that prairie land was open to settlement, the attraction of the West greatly increased and some of the best farmers of the East moved to the prairie regions. Migration from eastern farms was taking place not only to the prairies of the West, but also to the rapidly developing manufacturing centers.

Settlement and agricultural production had expanded rapidly into the prairie region of the Mississippi River and beyond. By 1860, settlement extended over southeastern Minnesota, Iowa, and Missouri, and the eastern counties of Kansas and Nebraska. California on the Pacific Coast was being rapidly developed. The population of Illinois alone in 1860 was greater than the combined population of Indiana, Illinois, Wisconsin, Iowa, Missouri, and Minnesota in 1840. The total population living in Ohio and the States to the west, which had been 4,401,000 in 1840, had increased to 10,112,000 by 1860. There were more settlers in Kansas and Nebraska in 1860 than there were in Wisconsin and Iowa in 1840.

TENANCY IN THE EASTERN STATES.

Favorable land laws made it easy to secure a farm in the West. High wages, together with low land values and the possibility of taking up new land, made it relatively easy in the West for the poor man to rise to the position of landowning farmer, provided he were willing to endure the hardship of a pioneer life. There are no statistics relating to tenancy and landownership in the United States prior to 1880. Yet it is evident that there was a considerable amount of tenancy in the Northern States from 1840 to 1860. This was especially true in the older settled sections of the East. It was reported from Warren County, New Jersey, in 1843, that one-fourth to one-third of the farms in that vicinity were rented, mostly on a share basis.¹ In the Genesee Valley, New York, the Wadsworth estate, comprising about 40 square miles, was entirely operated by tenant farmers. Numerous references are made in the agricultural literature of the period to rented farms in the Eastern States. In Ohio, Nicholas Longworth was reported to have 91 acres of land in vineyard in 1844, nearly all of which had been planted and was cared for by German tenants on the share system.² In the valleys of the Scioto and the Wabash Rivers large areas of land were rented out on the share system.³ As far west as Iowa, farm land was rented to tenants in 1858.⁴ In Illinois in 1859, when land could be purchased for \$2.50 per acre, farms were let to tenants for a share of the grain.⁵ Thus it would seem that more or less tenancy prevailed throughout the Northern States during the two decades. Share renting was the prevailing system. The number of large farms was not great. Exclusive of the border States, there were in 1860 only 787 farms over 1,000 acres in size, and of these 262 were in California. Table 63 shows the size of farms in several states of the North in 1850 and 1860.

TABLE 63.—Average size of farms.

	1850.	1860.
Massachusetts	98.5	93.8
Connecticut	106.2	99.5
Ohio	125	113.8
Illinois	158	145.9
Iowa	184.8	164.6

THE CHARACTERISTICS OF WESTERN FARMING IN 1860.

By 1860, new centers of agricultural production had developed in the West. Corn, hogs, and cattle were the most important products of the new agricultural territory, with wheat as the most important crop in southern Wisconsin and Michigan and northern Illinois. From central Ohio, west to central Iowa and western Missouri, corn was the leading grain crop and hogs and cattle were the dominating livestock, though sheep and horses

¹ *Cultivator*, X (1843), p. 113.

² U. S. Patent Office, *Annual Report* 1845, p. 311.

³ *Cultivator*, new series, VII (1850), p. 358.

⁴ *Country Gentleman*, XI (1858), p. 33.

⁵ Caird, *Prairie Farming in America*, 93.

were also widely distributed. Southern Michigan and eastern Ohio were the wool-growing centers of the West. Milch cows and butter production were as widely distributed as the population of the West, but the cheese industry was scarcely known West of northeastern Ohio. The agriculture of the West was characterized by the exploitation of the soil and by the production of those crops and classes of livestock which could be most successfully marketed. Beyond the limits of railway and water transportation, livestock production predominated and in a large measure a self-sufficing agriculture was practiced. Wheat enough for bread and wool enough for clothing were commonly raised, and the pioneer housewife of this period usually knew how to spin the yarn and weave the cloth worn by her family.

THE TRANSFORMATION OF EASTERN AGRICULTURE.

The agriculture of the East had been transformed. Hay was the leading farm crop in 1860. Wheat, corn, hogs, beef cattle, and sheep had been generally found unprofitable under conditions of western competition, though the

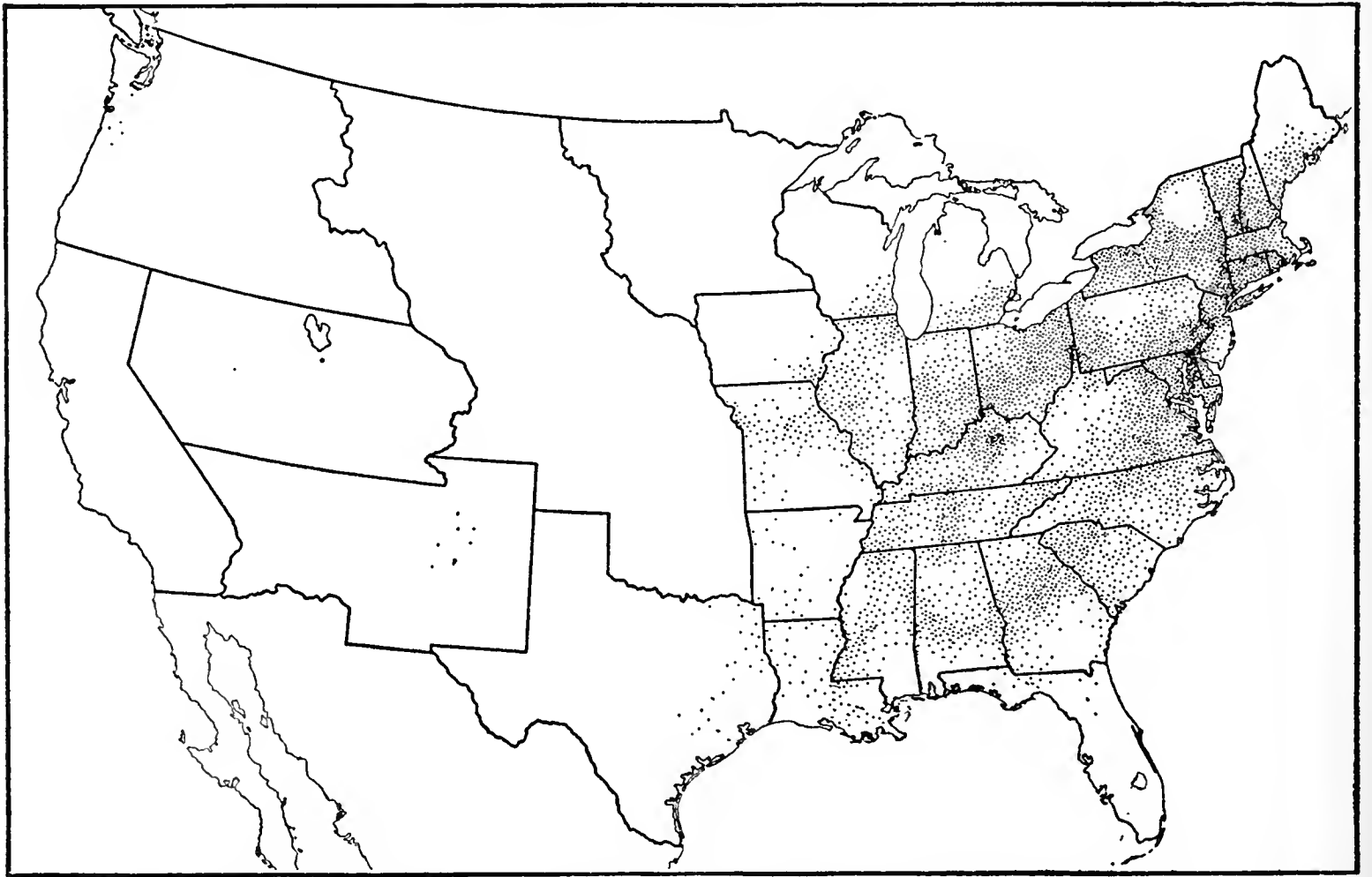


FIG. 113.—Improved land, 1850. Each dot represents 25,000 acres.

sheep industry was still important in the Berkshire hills of New England and in western New York. Northeastern Ohio and southern Michigan had become the most important sheep regions by 1860. Wheat was still a leading crop in southeastern Pennsylvania and in northwestern New York. Potatoes were grown throughout the country, with the most concentrated area of production on Long Island. The production of tobacco was developing in the Connecticut Valley. Hops were a leading crop in the vicinity of Otsego County, New York. Dairying based upon hay and pasture dominated the agriculture of the East in 1860, with whole milk, butter, and cheese as the sources of income.

In both the East and the West agricultural production had been greatly facilitated during the two decades by the introduction of improved machinery. The rapid development of the prairie region would have been impossible without the simultaneous development of agricultural machinery. The reaper, the mower, and the corn cultivator contributed largely to the more efficient use of agricultural labor. The development of railroads and other means of transportation, and in the East the rise of an urban population, were

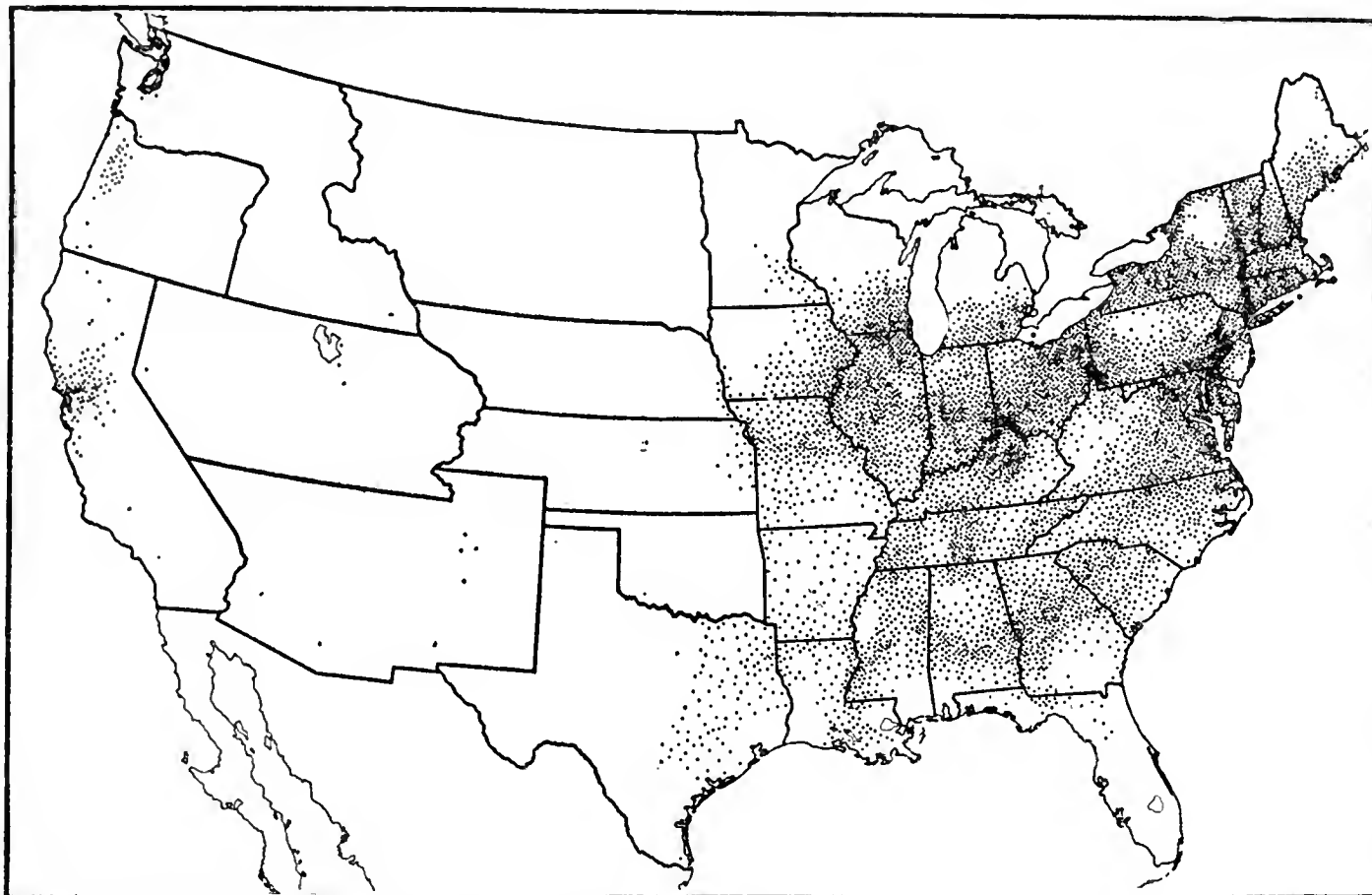


FIG. 114.—Improved land, 1860. Each dot represents 25,000 acres.

During the fifties the acreage of improved land in the states east of Ohio increased but little; in the West there was a rapid increase. In Wisconsin, Iowa and Illinois the improved acreage nearly trebled. It was comparatively easy to convert wild prairie land into improved land.

constantly developing new markets, and as markets widened there was a tendency for agriculture to become more commercial in nature. Increasing attention was given in the East to the production of those products for which a market was available and in the West to those which would stand shipment to a distant market. The prairies were well adapted to commercial agriculture. In the East much work which had formerly been done upon the farm was now being done in the cities. More time was given to the production of crops and livestock for market. The question of what was the most profitable enterprise was therefore prominent.

CHANGES IN SELECTION OF FARM ENTERPRISES MORE IMPORTANT THAN CHANGES IN CULTURAL METHODS.

There was little change in the thoroughness of culture practised in the West during the 20 years 1840 to 1860. The development of prairie lands and of harvesting machinery was conducive to extensive rather than to intensive

agriculture. In this new region crop yields depended largely on the caprices of nature. The pioneer farmer with small means and much land depended more on season and less on culture than the farmer of the older agricultural regions.

In the East there was considerable agitation, and something was accomplished in the way of improved methods of culture. The teachings of Jesse Buel and John Johnson were being slowly taken up. Farm buildings were being made more substantial. The quality of livestock was steadily improving. A more or less definite cropping system with the use of clover and manure had become rather generally adopted in the Northeastern States before 1860. In southeastern Pennsylvania, where the improved method of cropping had become well established by 1840, there was little change from 1840 to 1860 in the type of agriculture followed. The use of commercial fertilizer was steadily increasing, especially in the border States. The reorganization of agriculture in the East, however, was brought about by a change in the crops produced rather than by changes in thoroughness of culture.

The 20 years from 1840 to 1860 were a period of great uncertainty in the selection of farm enterprises in the older settled districts as well as in the new. The farmers who occupied the new territory had to experiment for themselves. The Vermont farmer who moved into Wisconsin or Illinois in the early forties frequently brought with him the nucleus for a flock of sheep. The Connecticut farmer brought with him the knowledge of cheese-making, and the Orange County farmer his churn. But the markets for these products were limited during the forties and fifties and nearly all western farmers turned their energies in the main to wheat or corn, hogs or cattle, whichever seemed for a time to be the most profitable. Wool-growing was tried on the prairies but did not prove successful. The production of fruit, hemp, and silk were all tried and abandoned.

Natural conditions of soil and climate, as well as economic conditions, such as the want of capital, scarcity of labor, and want of markets, were influential in determining the choice of enterprises. But whenever a branch of agricultural production, such as wheat, wool or beef, proved profitable in the West and poured its supplies into the eastern markets, it became necessary for the eastern farmer to find some other line of production, and, fortunately for the eastern farmer, the development of an urban population made this possible. The uncertainty in the choice of farm enterprises was stimulating to thought. It tended to make the agriculture of the period rational rather than traditional. It stimulated the development of the agricultural press and paved the way for the establishment of agricultural education.

TABLE 64.—Improved land: Area in the United States.

[Source: U. S. Censuses of 1850 and 1860.]

Geographic division and State.	1850.			1860.		
	Total 1000 acres.	Per capita acres.	Per cent of U. S. total.	Total 1000 acres.	Per capita acres.	Per cent of U. S. total.
United States	113,033	4.9	100.0	163,111	5.2	100.0
Geographic Division:						
New England	11,151	4.1	9.9	12,216	3.9	7.5
Middle Atlantic	22,806	3.9	20.2	26,766	3.6	16.4
East North Central...	22,912	5.1	20.3	41,186	5.9	25.2
West North Central..	3,768	4.3	3.3	11,122	5.1	6.8
Mountain	183	2.5	.2	241	1.4	.1
Pacific	165	1.6	.1	3,446	7.8	2.1
New England:						
Maine	2,040	3.5	1.8	2,704	4.3	1.7
New Hampshire	2,252	7.1	2.0	2,367	7.3	1.4
Vermont	2,601	8.3	2.3	2,823	9.0	1.7
Massachusetts	2,133	2.1	1.9	2,156	1.8	1.3
Rhode Island	357	2.4	.3	335	1.9	.2
Connecticut	1,768	4.8	1.6	1,831	4.0	1.2
Middle Atlantic:						
New York	12,409	4.0	11.0	14,358	3.7	8.8
New Jersey	1,768	3.6	1.6	1,945	2.9	1.2
Pennsylvania	8,629	3.7	7.6	10,463	3.6	6.4
East North Central:						
Ohio	9,851	5.0	8.7	12,626	5.4	7.7
Indiana	5,047	5.1	4.5	8,242	6.1	5.1
Illinois	5,040	5.9	4.5	13,096	7.6	8.0
Michigan	1,929	4.9	1.7	3,476	4.6	2.1
Wisconsin	1,045	3.4	.9	3,746	4.8	2.3
West North Central:						
Minnesota	5	.8	.....	556	3.2	.3
Iowa	825	4.3	.7	3,793	5.6	2.3
Missouri	2,938	4.3	2.6	6,247	5.3	3.8
Dakota Territory ....	.....	...	.....	2	.4	.....
Nebraska .....	.....	...	.....	119	4.1	.1
Kansas .....	.....	...	.....	405	3.8	.3
Mountain:						
New Mexico	166	2.7	.2	150	1.6	.1
Utah	17	1.4	.....	77	1.9	.....
Nevada .....	.....	...	.....	14	2.1	.....
Pacific:						
Washington .....	.....	...	.....	82	7.1	.1
Oregon	133	10.0	.1	896	17.1	.5
California	32	.4	.....	2,468	6.5	1.5

CLASSIFIED AND CRITICAL BIBLIOGRAPHY

BIBLIOGRAPHICAL AIDS.

Two bibliographies of agricultural history prepared in connection with the teaching of college courses on the subject have recently been published. Professor Schmidt's *Topical Studies and References on the Economic History of American Agriculture*, has a classified list of monographs and general secondary works, but is of little assistance in discovering the widely scattered source materials. Part III of Professor Trimble's *Introductory Manual for the Study and Reading of Agrarian History* is devoted to the United States. It is of the same character as Schmidt's work, but with less attention to technical bibliographical details. From Miss Hasse's monumental *Index of Economic Material in the Documents of the States of the United States* references may be obtained on the early history of agricultural societies and on early experiments in State aid to farmers. In general, however, State documents contain but little information on agricultural affairs before 1840. The general historical bibliography of Channing, Hart, and Turner can be used to advantage, particularly their lists of travels and of local history. The local history of Massachusetts is given more extended treatment in Flagg's *Guide to Massachusetts Local History*. An excellent bibliography of Maine covering its history to 1870 is the *Descriptive Catalogue* of Willis. Griffin's *Bibliography of Historical Publications of the New England States* and *Bibliography of American Historical Societies* save a vast amount of labor in gleaning the rare articles of agricultural interest from these voluminous publications. In Winsor's *America*, vols. III, IV, and V are excellent critical essays on general historical sources for New England and the Middle Colonies in the Seventeenth and Eighteenth Centuries. Tuckerman's *America and her Commentators* provides critical material on travelers' accounts. A partial and not altogether accurate bibliography of early agricultural journals is contained in a monograph by Gilbert M. Tucker, *American Agricultural Periodicals*.

GENERAL COLLECTIONS OF SOURCES.

PUBLIC RECORDS AND STATUTES.

The source material for the early history of American agriculture is not of a specialized nature, but is scattered widely in the source materials of our general and political history. Consequently, the worker in the narrower field finds the general collections of sources indispensable. In the seventeenth and eighteenth centuries colonial official records contain a wide variety of material of importance to the student of agricultural history, such as the provisions of early legislation regarding land tenure, the regulation of wages and prices, restrictions on imports and exports of grain and other products, the regulation of common pastures, etc. In addition, the colonial records contain reports from governors and investigating commissions, which, although generally

chiefly concerned with commerce and manufactures, yet throw much light incidentally on the kinds of crops and livestock raised and the extent to which farm products entered into colonial trade. The colonial records of Massachusetts Bay and the Plymouth Colonies, of Rhode Island, New Haven, Connecticut, and New York have been found particularly valuable. For New York we have not only the *Colonial Laws*, but the two collections edited by O'Callaghan, *Documents Relative to the Colonial History of the State of New York* and *Documentary History of New York*, in which official records of all kinds are accessible in convenient arrangement. In the latter work the tax lists of a number of Long Island towns for 1675 and 1676 are a unique source for the study of seventeenth century farming.

The *Documents Relating to the Colonial History of New Jersey* are in general disappointing. For the latter State Leaming and Spicer's *Grants and Concessions of New Jersey* presents the conditions of land settlement. In the *Pennsylvania Archives* there is little material of agricultural interest, except the volumes of series 3 (vols. XI-XXII) containing tax lists of a number of counties for various dates between 1765 and 1786. The great English collection of colonial material, the *Calender of State Papers, Colonial Series*, contains many items not found in our colonial papers, especially documents dealing with the exchange of agricultural products between the West Indian and the continental colonies.

In New England, town records, containing principally the minutes of town meetings, have in many cases been preserved and published. The *Records Relating to the Early History of Boston*, which contain the records of a number of formerly independent townships are a particularly good example of this type of source material. Land distribution and the regulation of common lands are the chief topics of agricultural interest.

PRIVATE COLLECTIONS OF SOURCES.

A general view of the problems of American agriculture, 1765-1865, and its relation to our economic development is presented in the source materials reprinted by Callender in his *Selections* and in his masterly introductory essays. Thwaites's *Early Western Travels* brings together in well-edited form the more important narratives describing pioneer life west of the Alleghenies in the early national period. For the study of the seventeenth century, the collections of Myers and of Jameson covering the earliest settlements in the Middle Colonies are indispensable. Of almost equal value for New England is Young's *Chronicles of Massachusetts*.

PUBLICATIONS OF HISTORICAL SOCIETIES.

In the *Collections* of the Massachusetts Historical Society is contained much source material on early New England which would otherwise be difficult or impossible of access, such as letters and reprints of rare pamphlets dealing with the history of the first settlements. The short historical sketches and descriptions of towns which are found in this collection, and in those of the Maine and New Hampshire societies, often contain valuable facts regarding agricultural conditions, particularly of the later eighteenth and early nineteenth centuries. The New York Historical Society's *Collections*, the

Memoirs of the Historical Society of Pennsylvania, and the *Pennsylvania Magazine of History and Biography* contain personal papers, journals, and diaries, mostly of political significance, but among them occasionally a first-hand description of economic conditions. In winnowing the grain of agricultural material from the chaff of political and military history, the machinery of Griffin's bibliography is of great assistance.

Among the newer societies, the Colonial Society of Massachusetts and the Ohio State Archæological and Historical Society have not only reprinted rare material, but have published a number of monographs in economic history which include considerable agricultural data.

GENERAL SECONDARY WORKS.

There are no sketches of agricultural progress in the general histories of our country, although a few historians, notably McMaster, have given attention to agricultural affairs in the north in their discussions of economic conditions. A general orientation in the subject of our agricultural history before the Civil War is furnished by Flint, in his article *Progress in Agriculture* published in Kettell's *Eighty Years' Progress*. More extended and systematic treatment of the changes in American farming from earliest times to the beginning of the twentieth century is found in Professor T. N. Carver's *Historical Sketch of American Agriculture*, in volume IV of Bailey's *Cyclopedia of American Agriculture*. The introduction to the volume on agriculture in the reports of the *Census of 1860* contains many valuable facts regarding the introduction of agricultural machinery and the development of internal trade in livestock and grain.

THE AGRICULTURE OF THE EARLIEST SETTLEMENTS.

SOURCES.

NEW ENGLAND.

The agricultural information in the colonial and town records refers principally to the distribution of land, the conditions of land tenure, and also the regulatory activities of the legislative bodies in fixing wages and prices. There are two valuable official reports which contain information regarding economic conditions in New England colonies, the *Narrative of the Commissioners* (1665) and Randolph's *Narrative* (1676). Of a semi-official character are the writings of the leading men in the Massachusetts Bay and Plymouth Colonies, Johnson's *Wonder-Working Providence*, Winthrop's *Journal*, and Bradford's *History of Plymouth Plantation*. They set down from personal observation the facts of the struggle of the earliest settlers with the soil. Two valuable descriptions of the early settlements containing agricultural data are Wood's *New England's Prospect* (1634) and Maverick's *Briefe Description of New England* (1660). Josselyn's *Account of Two Voyages to New England* must be used with care. Although not accounted as thoroughly reliable in handling of historical events, Captain John Smith recorded a few valuable observations in his *Advertisements*. Two source accounts of Indian agriculture in New England are Roger Williams's *Key to the Indian Language*, and Winthrop's *Description of Maize*.

MIDDLE COLONIES.

The earliest agricultural experiments of the Dutch settlers in New Netherlands are described in Jameson's well-edited collection of source materials. The best accounts are contained in the *Letter* of Isaak De Rasieres (1628), the *Letter* of Rev. Jonas Michaelius (1628), and in the *Representation of New Netherland* (1650). More extensive and perhaps more accurate than these selections is the work of Van Tienhoven (*Information Relative to Taking up Land in New Netherland*), who in 1650 was secretary of the province. An equally good source is Van der Donck's *Description of the New Netherland*, written by the Sheriff of Rensselaerswyck in 1656. After the English conquest, when settlement had expanded to Long Island and the mainland, we have Denton's *Brief Description*, written in 1670, after a residence of over a quarter of a century. Two keen observers, Dankers and Sluyter, recorded a number of significant facts regarding farming near New York in their *Journal* of 1679-1680.

The earliest agricultural struggles of settlements on the Delaware, in the colony of New Sweden, are described in official reports of two of its governors, Johan Printz and Johan Rising. For the later English settlements in New Jersey, the best source is Scot's *Model of the Government of East New Jersey* (1685), which contains many letters from Scotch colonists. A number of pamphlets were issued by the trustees and proprietors of the provinces of East and West New Jersey with the purpose of stimulating immigration. Such were *The Present State of the Colony of West Jersey* (1681) and *Brief Account of East Jersey* (1687). The natural bias of the authors must be kept in mind in using this material. William Penn was a vigorous "promoter" of his province and wrote a number of descriptive tracts, the most valuable of which are the *Letter to the Committee of the Free Society of Traders* (1683) and the *Further Account of the Province of Pennsylvania* (1685). The *Letter* of Thomas Paschall gives a clear picture of pioneering in the first few months of the establishment of Penn's colony. Budd, a man of importance in West Jersey, describes more settled farming in his *Good Order Established in Pennsylvania and New Jersey* (1685). A more ambitious undertaking than any of the above-mentioned pamphlets was the *Historical and Geographical Account* of Gabriel Thomas (1698). Although written to incite immigration, it is reliable for statements of fact within the author's own experience. A similar observation might be made regarding the *Circumstantial Geographical Description* of Pastorius (1700). The author, an agent of the Frankfort Land Company, was well versed in the agricultural science of his day.

SECONDARY WORKS—MONOGRAPHS AND ARTICLES.

An excellent study of the farm practices of the American Indians is that of G. K. Holmes in Bailey's, *Cyclopedia*. The agriculture of New England natives is described by Willoughby in his article in the *American Anthropologist*. Two studies which bear on the struggles of the earliest New England settlers to get a living from the soil are Goodale's *New England Plants Seen by the Earliest Colonists* and Goss's *The Hungry Pilgrims*. On the physiog-

raphy of the region, in which the first settlements were made, Shaler's *United States* and his *Physiography of North America* are valuable. *Bulletin 96* of the Bureau of Soils of the U. S. Department of Agriculture has a good map showing the distribution of various kinds of soils. The text, however, is rather too technical for any but experts in that field.

The terms on which settlers acquired land have been given thorough discussion in a number of monographs. In *The Germanic Origin of New England Towns* Professor Adams attempted to show the derivation of the common fields, and other features of the New England village community, from Teutonic institutions. Other studies inspired by his genius are Andrew's *River Towns of Connecticut* and Egleston's *Land System of the New England Colonies*. MacLear's *Early New England Towns* has a chapter on land tenure based on the study of town records of five towns near Boston. Studies of the common pastures in localities where they persisted into the nineteenth century are Worth's *Nantucket Lands and Land Owners*, Jameson's *Nantuck and Common Lands of Easthampton*, and Sheldon's *The Common Field of Deerfield*. Local histories of New England often devote considerable attention to the description of the laying out of the town, with maps showing the arrangements of home lots and common fields. Among these are Burt's *Springfield (Massachusetts)*, Clark's *Sturbridge (Massachusetts)*, Green's *Early Land Grants of Groton*, Love's *Hartford (Connecticut)* and Steiner's *Guilford (Connecticut)*.

For the district in New Jersey where New England methods of settlement prevailed we have Hatfield's *Elizabeth*, Atkinson's *Newark*, and Dally's *Woodbridge*.

The characteristic features of land tenure in New Netherland are described in Elting's *Dutch Village Communities on the Hudson River*. *The Province of New Jersey*, by Edwin Tanner, has two chapters devoted to the land system of a proprietary colony. Ballagh's *Introduction to Southern Economic History* contains a preliminary discussion of land tenure in the northern colonies. Perhaps the most valuable work in this field for the student of agricultural history is Osgood's *American Colonies in the Seventeenth Century*, which contains a thorough analysis of the land systems of the New England and the Middle Colonies, with contrasts, comparisons, and sound generalizations.

EIGHTEENTH CENTURY AGRICULTURE.

SOURCES.

SPECIAL WORKS.

Jared Eliot's *Essays on Field Husbandry in New England*, a collection of six essays published in the years 1749 to 1759, was the first American work on agriculture. As the author, the minister at Killingworth, Connecticut, states in his preface, the book was not "*an Account of what we do in our present Husbandry, but rather what we might do to our advantage.*" Nevertheless, it contains many valuable comments on prevailing practices, based on close acquaintance with the habits of farmers in Connecticut.

In 1775, *American Husbandry*, a book of two volumes, appeared anonymously in London. It was then and is now the best account of the economic conditions in general, and agricultural affairs in particular, of the English

colonies in America. Writing with clear and vigorous directness, the author describes the soil, climate, agricultural practices, and products of each colony, from Nova Scotia to the West Indies. He was evidently a man of scientific training, familiar from personal observation with the agriculture of Virginia and Maryland, who had also visited Pennsylvania and probably New England. In a recent review of *American Husbandry*,¹ Mr. Lyman Carrier has claimed its authorship for Dr. John Mitchell, an English physician, naturalist, and historian, who spent part of his life in Virginia.

William Strickland's *Observations on the Agriculture of the United States of America*, a pamphlet of 74 pages published in 1801, was also the work of an Englishman. Strickland traveled in this country in 1793 and 1794, collecting information for the English Board of Agriculture, principally in regard to land values, tenancy, and wages. Richard Peters² said of him that he paid more attention to truth and accuracy than most travelers, but that he had some prejudices and was occasionally misinformed. Another source of information which we owe to English interest in American agriculture is the correspondence between George Washington and Arthur Young and Sir John Sinclair (*Letters on Agriculture*, etc). In response to a request for detailed information on American conditions, Washington in 1791 circulated a questionnaire among prominent farmers in Pennsylvania, Maryland, and Virginia, the answers to which he transmitted to England. The facts thus obtained were detailed, but limited to only a few farms. Dr. Tilton's *Present State of Husbandry and Agriculture in the State of Delaware* (1789) contains detailed answers to 44 queries from Abbé Tessier of France, transmitted through the Philadelphia Agricultural Society. Crèvecoeur's *Letters from an American Farmer* (1782) supply an idealized picture of pioneer life in Pennsylvania and New York. They are valuable rather for their charming literary style than for the information which they supply regarding typical farm practice.

OFFICIAL RECORDS.

The published records of the various colonies afford little information on eighteenth century agriculture. Facts regarding trade in agricultural produce are contained in the occasional official reports of colonial governors. State aid and regulation appears in statutes regarding sheep, flax, hemp, and barberries. The county tax lists published in the *Pennsylvania Archives* are in effect a partial agricultural census, showing the size of individual farms and the number of several kinds of stock kept on each. The tax lists of Massachusetts for the years 1767, 1801, and 1811, preserved in conveniently accessible form in the State House in Boston, show by townships the acreage of farm land of various kinds, livestock kept, and crops harvested. Connecticut tax lists, also unpublished, are available in an almost continuous series from 1796 to 1840, showing by counties the acreage of several kinds of farm land and the number of horses, mules and cattle.

¹ American Society of Agronomy, *Journal*, XI (1919), pp. 206-211. More extended treatment of Mitchell's life and works is given in an article by Mr. Carrier in the American Historical Association's *Annual Report* for 1918, pp. 219.

² Philadelphia Society for Promoting Agriculture, *Memoirs*, I (1808), p. 161.

PRIVATE RECORDS.

Not many farmers kept account books or diaries, but occasionally a clergyman's journal of daily activities has been preserved, in which the records of farming operations are interspersed with parish and personal items. Such are the *Journals* (1725 to 1814) of Rev. Thomas Smith and Rev. Samuel Deane, of Portland, Maine, the *Diaries* (1746 to 1780) of Rev. Timothy Walker, of Concord, New Hampshire, and the *Letter Book* (1743 to 1751) of Rev. James McSparran, of South Kingston, Rhode Island. Miss Hazard's *College Tom* is based on the account book (1750 to 1789) of Thomas Hazard, a large-scale farmer of the Narragansett country. Occasionally a manuscript account book showing farming operations comes to light. Such is the *Account Book* of Rev. Medad Rogers, the minister of New Fairfield, Connecticut, covering the years 1789 to 1822.

BOOKS OF TRAVEL.

In the latter half of the eighteenth century, particularly after the end of the Revolutionary War, a large number of European travelers visited the older settlements in the North and recorded their impressions in books of travel. Such books are of widely varying value to the student of agricultural history. Many may be discarded as worthless because of the manifest unreliability of the author, or because of his lack of interest in economic conditions. The works of a few are valuable, but their observations the reader must use with care, discriminating between hearsay and first-hand material, and between facts which were exceptional and those which were typical. Per Kalm, a Swedish botanist well-qualified as an observer, visited us in 1748-1750 and recorded his comments on our farming, chiefly of the Middle Colonies, in his *Travels*. Another trained scientist, a botanist and mineralogist, was Johan David Schoepf, who left the record of journeys through New Jersey, Pennsylvania, Maryland, Virginia, and nine southern colonies in his *Travels in the Confederation* (1783-84). Among the French travelers of the late eighteenth century, the work of La Rochefoucauld-Liancourt has by far the greatest merit. His *Travels Through the United States of North America* (1795) shows a deep interest in economic conditions and painstaking accuracy in observation and recording of details. Weld's *Travels* (1795-1797), the work of an Irish refugee looking for a suitable place for colonization, contain many facts of an economic character.

Among the observers in more limited areas, Timothy Dwight has left the best records. His *Travels in New England and New York* was compiled from voluminous notes taken during horseback journeys in college vacations between 1796 and 1815. The President of Yale College and one of the best educated men of his day, Dwight not only saw truly and recorded carefully, but he was also intent upon knowing the causes of the conditions he observed, as witnesses his interest in the relation of the barberry to the rust in wheat. Richard Smith's *Journal* (1769) is a first-class source on frontier farming on the Mohawk and upper Delaware Rivers. Acrelius's *New Sweden* (1759) gives careful treatment of the farming of the lower Delaware, based on the personal observations of the author. Rush's *Account of the German Inhabitants of Pennsylvania* (1789) contains the observations of a scientist, a close observer keenly interested in agriculture.

SECONDARY MATERIAL.

SPECIAL WORKS.

A general survey of colonial farming and farm life, with particular attention to the middle and southern colonies, is to be found in Eggleston's series of articles in the *Century Magazine* (1883 to 1885). The author has evidently used a wide variety of source materials, although few are cited, and shows a clear appreciation of the influence of economic factors. Hedges's *Development of Agriculture in Suffolk County* and Onderdonk's *Ancient Agriculture in Hempstead* supply much information on the farming of Long Island in this period. In *Rural Economy in New England at the Beginning of the Nineteenth Century* the author has discussed the influence of economic factors, particularly the lack of markets, on the types of farming and on home and community life. Phillips's *Horse Raising in Colonial New England* is a well-reasoned study based on a wide variety of source material.

LOCAL HISTORIES—NEW ENGLAND.

State and town histories often contain significant paragraphs, even chapters, on economic conditions in the eighteenth century, including data on agriculture. New England, on account of the strength of local feeling in that region, is particularly rich in historical material. Of the many histories of New England written in the eighteenth century, only one, Douglass's *British Settlements in North America* (1749), the work of a Boston physician, contains any considerable amount of economic information. The author, a Scotchman by birth, is so enamored of his adopted country that he often exaggerates its merits. Among recent secondary works dealing with economic affairs, Weeden's *Social and Economic History of New England (1620-1789)* is the most ambitious undertaking. It is based on a wide variety of source material and includes many agricultural facts, but its arrangement is not designed to give a clear picture of agricultural progress.

For Maine we have a number of valuable short sketches in the First Series of the *Collections* of the Maine Historical Society, particularly those of William Allen. North's *Augusta*, and Wheeler's *Brunswick*, of all the town histories, devote most attention to agricultural affairs in this period. New Hampshire agriculture, chiefly timber farming, is carefully and intelligently discussed in the third volume of Belknap's *New Hampshire* (1792). Two town histories are of exceptional value, Hayward's *Hancock* and Chase's *Old Chester*. Considerable information regarding pioneer conditions in Vermont is to be found in the Appendix of Allen's *Natural and Political History of the State of Vermont* (1798).

In Massachusetts, agricultural interests have received most attention in the histories of towns of the Connecticut Valley. Of first rank is Judd's *Hadley*, a work based on a wealth of manuscript materials. Trumbull's *Northampton* is to some extent based on Judd's manuscript sources. Farming in the region about Deerfield is described in articles by George Sheldon in the Pocumtuck Valley Memorial Society's *History and Proceedings*. Other less valuable town histories of this region are Temple's *Whately* and Temple and Sheldon's *Northfield*. The rural life of an interior township is exceptionally well described in Nourse's *Harvard* and also in Bolton's *Shirley*. Felt's *Ipswich*,

Essex, and Hamilton contains a number of scattered facts concerning the farming in coast towns. To understand the peculiar conditions of the island of Nantucket, resulting from the competition of the maritime industries and agriculture, one should read Obed Macy's *History of Nantucket* (1835) and the articles by Zacchaeus Macy and Walter Folger, jr., in volume III, first series, *Collections of the Massachusetts Historical Society*. A scholarly study of rural life, especially in its moral aspects, will be found in Charles Francis Adams's *Braintree*.

The Connecticut local histories are disappointing. Love's *Colonial History of Hartford* and Steiner's *Guilford* deal rather fully with the land system of the seventeenth century. Larned's *Windham County* and Davis's *Wallingford* have been found useful. Rhode Island material deals principally with the Narragansett country. Macsparran's *Letter Book* (1743-1751) gives a day-by-day account of the varied activities of a minister of the Church of England, including his farming. Updike's *History of the Episcopal Church in Narragansett* gives an exceptionally good picture of the aristocratic rural life and the large-scale grazing and dairy industry in that district in the eighteenth century. Channing's monograph, *The Narragansett Planters*, analyzes the causes of the peculiar agricultural conditions in the locality and shows their bearing on local politics. Weeden's *Early Rhode Island* is concerned with townspeople rather than with farmers.

MIDDLE COLONIES.

There is little information to be derived regarding eighteenth century agriculture from local histories of New York, except those dealing with Long Island, a somewhat exceptional area. Source material is provided in Gardiner's *Notes on East Hampton*. Wood's *Sketch* has valuable data regarding the earliest settlements. Onderdonk's *Queens County in Olden Times* has a few items regarding eighteenth century farming. Gabriel's *Evolution of Long Island* is a scholarly work, tracing the economic (principally agricultural) development of the island. The general *History of the Province of New York*, of Smith (1762) gives a few facts on agricultural affairs in the various counties.

For New Jersey, secondary material is very poor. The agriculture of older counties of Pennsylvania has received considerable attention in a number of local histories. The best of these are: Ashmead's *Delaware County*, Futhey and Cope's *Chester County*, Ellis and Evans's *Lancaster County*, and Watson's *Account of Buckingham and Solebury, Bucks County*.

WESTWARD EXPANSION.

SOURCES—TRAVELS, JOURNALS, AND RECOLLECTIONS.

Almost our only records of pioneer farming in the West which can be called source material are the books of travel and personal recollections. Doddridge's *Notes* (1763-1783) have a splendid account of backwoods life in western Virginia and Pennsylvania. Michaux, in his *Travels* (1805), commented intelligently on farming on either side of the Ohio. Evans, a "queer" New Englander, has scanty but thoughtful remarks on the farming of Western New York and Ohio in his *Pedestrious Tour* (1818). James Flint's *Letters*

from America (1818-1820) is one of the best accounts of the old Northwest by a fair-minded observer with keen appreciation of economic factors. Fordham's *Personal Narrative* (1817-1818) also shows a scientific spirit and is reckoned as a reliable authority. Faux, an English farmer, set down some penetrating comments amid much that was sensational and prejudiced.

Enthusiastic accounts, probably somewhat exaggerated, of the merits of western New York as a farming country are found in the *Account of the Genessee Tract* (1791), in Imlay's *Western Territory*, and in the *Description of the Settlement of the Genessee Country, 1792*, in O'Callaghan's *Documentary History of New York*. Maude's *Visit to the Falls of Niagara in 1800* is reliable for statements of things coming under his immediate observation. *The Journal of Judah Colt* (1789-1808) gives an interesting account of the daily work of a pioneer farmer. William Cooper, a pioneer farmer and founder of Cooperstown, New York, describes the early life of his settlement in the *Guide in the Wilderness* (1810).

For Ohio, the *Recollections of W. C. Howells* (edited by his son, William Dean Howells) contains a vivid account of the life of a farm boy in the years 1813 to 1840. Rural home and community life about 1830 are described in detail in Welker's *Farm Life in Central Ohio*. Atwater's *History of the State of Ohio* (1838) quotes facts and contemporary opinion regarding agriculture. *The Valley of the Upper Wabash*, written in 1838 by Henry W. Ellsworth, the son of our first head of the Patent Office, "booms" prairie farming. A good selection of source material on pioneer life is contained in the *Readings in Indiana History*, published by Indiana University.

For Illinois we have an excellent survey of economic conditions in Buck's *Illinois in 1818*, a scholarly work with many references to authorities. John Reynolds, a former governor of the State, recorded agricultural facts among his memories of pioneer life in *My Own Times*. Wood's *Two Years Residence in the Illinois Country* contains a concise account of agricultural practices, products, soil, etc. *The History of the English Settlement in Edwards County*, by George Flower, Richard Flower's *Letters from Lexington and the Illinois* and *Letters from the Illinois*, and Birbeck's *Letters from the Illinois* tell the story of an unsuccessful attempt about the year 1820 to colonize the frontier with English immigrants. The *Report of Gottfried Duden*, which Professor Bek has translated, gives a comprehensive and substantially accurate account of conditions in eastern Missouri.

SECONDARY MATERIAL.

The best general survey of the westward movement is given in Professor Turner's *Rise of the New West* and in his article *Colonization of the West* (1820-1830), in the *American Historical Review* (1905-1906). Miss Mathews has traced the northern stream of emigration in her *Expansion of New England*. Roosevelt's *Winning of the West* describes the passing of the southern frontier folk across the mountains, giving an excellent account of backwoods life at the end of the eighteenth century.

SPECIAL STUDIES.

Descriptions of the physiographic features of the Ohio Valley, with discussions of their influence on agriculture, are to be found in Shaler's *United*

States, Bowman's *Forest Physiography*, and Brigham's *Geographic Influences in American History*. Monographic studies of the national land system are Treat's *National Land System* (1785-1820) and Sato's *Land Question in the United States*. A mass of facts, poorly arranged, regarding the public lands is contained in Donaldson's *Public Domain*.

On the development of internal trade in the West there is an admirable chapter in Callender's *Selections. Statistics of the West*, by James Hall (1836), has much information on trade in agricultural products. The best official source is Andrews's *Report* of 1854. A good historical survey of the commerce of the Mississippi and Ohio is found in the *Report on the Internal Commerce of the United States for 1887*. Helpful monographs are Benton's *Wabash Trade Route* and Gephart's *Transportation and Industrial Development in the Middle West*. A particularly interesting feature of internal trade, the eastward droving of western cattle, is discussed in King's *Coming and Going of Ohio Droving* and in Renick's article, *Cattle Trade of the Scioto Valley*. Lippincott's *Pioneer Industry in the West* shows the importance of household industries in pioneer agriculture.

A few historical sketches have been written of agriculture in Middle Western States. C. W. Burkett's *History of Ohio Agriculture* has but little material on the period before 1840. Conner's *Indiana Agriculture* is brief but definite. Flagg's article, *Agriculture of Illinois*, in the *Transactions* of the Illinois Department of Agriculture for 1875, is a good historical sketch. Mumford's *Century of Missouri Agriculture* draws largely from Duden's *Report* in discussing conditions before 1860. The beginnings of agriculture in Michigan are summarized in Adam's *Agriculture in Michigan*. A few scattered bits of agricultural history are also to be found in Fuller's *Economic and Social Beginnings of Michigan*.

AGRICULTURAL PROGRESS IN THE EAST, 1800-1840.

SOURCES.

PERIODICALS—AGRICULTURAL AND GENERAL.

Farm papers are one of the most valuable sources of information for changes occurring in the years 1820 to 1840. Of especial value are the letters from contributors and the market news. (A fuller discussion and list of agricultural periodicals published before 1840 is found in Chapter XIV, p. 193). Of the general periodicals, Niles's *Weekly Register* (1811-1849) seems to have given the most attention to agricultural affairs, printing contributions from many widely separated localities. Semiweekly and weekly newspapers containing prices of agricultural produce are *Boston Gazette*, *Boston Weekly Messenger*, *Boston Patriot*, and *New York Shipping and Commercial List*.

STATE DOCUMENTS.

The publications of the two earliest State boards of agriculture, the *Memoirs* of the New York board and the *New Hampshire Repository*, help to reconstruct a picture of farming practices of 1820 in those States. With the aid of Miss Hasse's *Index* a number of short articles of a historical nature may be

discovered in the *Transactions* of State agricultural societies and *Annual Reports* of the State boards of agriculture and in *Reports* of legislative committees. The documents of Maine, Massachusetts, and New York yield most.

Reports of unique value are those of the *Agricultural Survey* of Massachusetts, prepared by Henry Colman, in the years 1838 to 1841. They deal thoroughly, even minutely, with farm practice and household economy in four counties, Essex, Berkshire, Middlesex, and Franklin. Colman collected material by questionnaires and by personal visits to hundreds of farms. The third report is devoted to the consideration of the culture of wheat and silk.

PUBLICATIONS OF AGRICULTURAL SOCIETIES.

The publications of the "literary" agricultural societies—Massachusetts Agricultural Repository (1798 to 1832), New York Society for the Promotion of the Useful Arts, *Transactions* (1801 to 1819), Philadelphia Society for Promoting Agriculture, *Memoirs* (1808 to 1826)—contain little information regarding American methods of farming, although they shed much light on the state of agricultural sciences. Volume II of the publication of the Massachusetts society is exceptional, providing in the answers received to the society's questionnaire of 1807 definite material on agriculture in New England.

SECONDARY MATERIAL.

SPECIAL WORKS.

A contemporary description of northern agriculture of considerable value is that written about 1813 by Robert Livingston for the *Edinburgh Encyclopedia*. Phelps's *Rural Life in Litchfield County, Connecticut*, gives particular attention to changes occurring since 1800. In Bidwell's article, *The Agricultural Revolution in New England*, the influence of the home market on farming is discussed and the readjustments made necessary by western competition. Piper and Bort's *Early Agricultural History of Timothy* and Carrier and Bort's *History of Kentucky Bluegrass and White Clover in the United States* are scholarly monographs discussing the origin of these important forage plants. Much assistance has been derived from Dr. Stine's unpublished *Economic History of Wheat in the United States*. Livingston's *Essay on Sheep* (1809) supplies important facts regarding the early importations of the Merino sheep by one of the pioneers in the adventure. Randall's *Fine Wool Sheep Husbandry* (1862) has a carefully prepared historical sketch of the Merino and Saxony breeds, quoting sources. The U. S. Bureau of Animal Industry's *Special Report on the Sheep Industry* (1892) has a large collection of historical material regarding American sheep. Wright (*Wool Growing and the Tariff*) provides thoughtful summaries of the changes in sheep-raising, relating them to the progress of the household and factory woolen industries. Facts regarding the decline of rural household industries are presented in Tryon's *Household Manufactures in the United States*. Johnson's *History of the Domestic and Foreign Commerce of the United States* (Carnegie Inst. Pub. No. 215A) shows the importance of farm products in our national trade. Official commercial statistics are arranged in convenient form in Pitkin's *Statistical View of the Commerce of the United States of America*.

TREATISES AND HANDBOOKS ON FARMING.

Almost a generation elapsed after the publication of Eliot's *Field Husbandry in New England* before other books of its type appeared. But the interest of public-spirited and educated men turned to agriculture after the Revolutionary War, and the numerous treatises brought out in the final decades of the century may be said to mark the beginning of a distinctive literature of agriculture in this country. For the most part, the new treatises were merely paraphrases of standard English works. Such were Bowler's *Treatise on Agriculture and Practical Husbandry* (1786), Spurrier's *Practical Farmer* (1793), and Robert's *Pennsylvania Farmer* (1804). In Bordley's *Essays and Notes* (1791) and in Deane's *New England Farmer* (1st ed., 1790) we find, in addition to the exposition of the best English practice, significant comments on farming in Pennsylvania, Maryland, and New England. A modest volume containing much common sense advice is John Dabney's *Address to Farmers* (Salem, Mass., 1796). A small pamphlet by Hon. Charles Thompson, printed anonymously in New York in 1787 under the title *Notes on Farming*, contains facts regarding farm practice in Pennsylvania. Lorain's *Nature and Reason Harmonized in the Practice of Husbandry* (1825) is the work of an iconoclast bent upon upsetting the traditional theories of plant growth and nutrition, but lacking adequate knowledge to correct them.

LOCAL HISTORIES, GAZETTEERS, AND STATISTICAL ACCOUNTS.

The agricultural material in the town and county histories relates for the most part to eighteenth century conditions. (See p. 461.) Only a few local historians have grasped the significance of changes in progress between 1800 and 1840. Thompson's *History of Long Island* contains a short account of improved farming near New York, which may be supplemented from Cobbett's *Year's Residence in the United States of America*. New York agriculture was critically examined and discussed by John Fowler, an English farmer, in his *Journal of a Tour in New York*. He spent two months in the State in 1830. A local history which devotes an unusual amount of attention to agricultural changes is Miller and Wells's *Ryegate, Vermont*.

The first two or three decades of the nineteenth century witnessed great enthusiasm for the collection and publication of geographical, historical, and statistical material of a local character, in the form of gazetteers. *The American Geography* and *American Gazetteer* of Rev. Jedidiah Morse contain paragraphs describing the chief agricultural interests of the various States. The *Collections* of the historical societies of Maine, Massachusetts, and New Hampshire contain a large number of descriptions of towns written in gazetteer style. An attempt on the part of the Connecticut Academy of Arts and Sciences to obtain descriptions of towns in that State resulted in the preparation about 1810 of Dwight's *Statistical Account of New Haven*, Morris's *Statistical Account of . . . Litchfield*, Field's *Statistical Account of . . . Middlesex* and Goodrich's *Statistical Account of Ridgefield*, all of which contain first-hand material on agriculture. Pease and Niles's *Gazetteer of Connecticut and Rhode Island* (1819) is one of the best specimens of this kind of work. For Massachusetts we have Greenleaf's incomplete *Geographical Gazetteer* (1784), Dickinson's *Geographical and Statistical View* (1813), and the same author's *Description of Deerfield* (1817).

The discussions leading to the separation from Massachusetts of the District of Maine resulted in the publication of two investigations of land tenure and general agricultural conditions in that region, Whipple's *Geographical and Statistical View of the District of Maine* (1816), and Greenleaf's *Statistical View* (1816). The latter, the more careful work, was based on personal observation and has statistics compiled from valuation returns of 1810. A revised and enlarged edition (*Survey of the State of Maine, 1829*) used the 1820 valuation returns. For Vermont and New Hampshire the *Gazetteers* of George, Thompson, Merrill, and Moore afford scattered bits of information regarding agricultural affairs. The gazetteers of the Middle Atlantic States which have here been found most useful for the study of local conditions are those of Spafford, Gordon, and French for New York, of Gordon for New Jersey (part II of his *History of New Jersey*), Scot's *Geographical Description of Pennsylvania*, Gordon's *Gazetteer of Pennsylvania*, and Trego's *Geography of Pennsylvania*.

THE PERIOD OF TRANSFORMATION, 1840 TO 1860.

SOURCES.

UNITED STATES CENSUSES, 1840, 1850, 1860.

The census of 1840 was the first in which an attempt was made to collect statistics of agricultural production. Returns were made by counties for 26 items, including the number of livestock (classified as horses and mules, neat cattle, swine, and sheep), the crops of wheat, corn, rye, and other cereals, potatoes, hay, cotton, wool, hemp and flax, tobacco, rice and hops. The products of the dairy, the orchard, and market gardens were reported in values. In 1850 the scope of the agricultural inquiry was enlarged and greater care was taken to insure accuracy and to correct inaccuracies. The census of 1860 was taken with the same schedule used in 1850. The data in the three censuses are, with a few exceptions, comparable. But few changes in classification were made. The date of enumeration for 1850 and 1860 was June 1. In 1840 the enumeration began June 1, but the returns were not finally complete until January 1, 1842. In accuracy these early censuses compare favorably with later enumerations. Many complaints were made of inaccuracies after the publication of the 1840 data, but these were confined to the population figures. In the preparation of the dot maps serious omissions or overcounting in any census year would have appeared when compared with the figures of the succeeding or the preceding census. No such anomalous results were discovered.

In the Introduction to the volume devoted to agriculture (vol. I) of the *Census of 1860* there are 164 folio pages devoted to analysis of the 1860 figures and to their comparison in tabular form with the census returns for 1840 and 1850. In addition, the Introduction contains several first-rate historical articles based on information supplied by experts in various fields. Particularly valuable are the articles on agricultural implements, the grain trade and the cattle trade.

In the *Census of 1880* (vol. III, pp. 133-141) there is a brief outline of our agricultural history, by William H. Brewer.

UNITED STATES PATENT OFFICE REPORTS.

The annual reports of the Commissioner of Patents for the years 1839 to 1861 afford source material of extraordinary importance. Beginning in modest fashion with remarks on agricultural machinery, the portion of the report devoted to agriculture steadily expanded until in 1845 it included over 1,000 pages. After that year the agricultural section was contracted, but remained a substantial volume. The material in the reports may be roughly divided into two classes, the economic and the technical. In the earlier volumes of the series a keen interest is evident in the business side of farming and in the economic relations of agriculture to manufacturers and commerce. In the years 1841 to 1848 efforts were made to measure statistically the principal crops of each State. The estimates were based on the census of 1840. The figures of that year were revised according to reports of crop conditions and yield in agricultural periodicals and in newspapers, and from the reports of volunteer correspondents in a number of States.

The movement of farm products in internal and foreign trade is shown by statistics of shipments and receipts at important canal, lake, river, and ocean ports. In a number of the earlier issues extended discussion is given to the relative importance of home and foreign markets. Attempts were made to compare domestic and foreign prices of our staple products. The estimates of the cost of producing wheat, corn, and other crops which were occasionally published, as for example in the volume for 1847, are a still further indication of the emphasis placed on the study of the farmers' business problems.

The science and practice of agriculture receive relatively greater attention in the later volumes of the series. Excerpts from foreign and domestic agricultural journals were freely reprinted in the attempt to diffuse and popularize the revolutionary discoveries of the age. New crops and new methods were advocated with little or no regard to cost and profit on the average farm. Material of this character duplicates the agricultural periodicals and is of little value to the economic historian. On the other hand, the voluminous correspondence from farmers in all parts of the country, describing their actual farm practice, is a mine of information. In 1851 and 1852 attempts were made to systematize this information by the use of a questionnaire. The replies reprinted in the volumes for those years are numerous and valuable.

A combination of economic and technical information is to be found in the special articles describing the development and status of branches of the agricultural industry. Such are Randall's *Sheep Husbandry and Wool Growing* (1850, pp. 129-144) and Cist's Article on *The Hog Crop* (1847, pp. 524-533). Agricultural education and the activities of agricultural societies are frequently discussed. Of especial value in this regard are the volumes for 1857 (pp. 1-50) and 1858 (pp. 92-213).

PUBLICATIONS OF STATE AGRICULTURAL SOCIETIES AND OF STATE
BOARDS OF AGRICULTURE.

Supplementing the national point of view of the Patent Office *Reports*, the annual reports of the State organizations enable the historian to see the agriculture of the period from the local standpoint and to get a firmer grasp of local conditions. Established rather for educational than for administrative

purposes, the State societies and boards devoted their attention chiefly to the collection and diffusion of information which they thought valuable to farmers. The New York society ambitiously attempted in its first year (1841) an agricultural survey of the State by counties. Circular letters containing a wide variety of questions on crops and cultural practice, livestock, and its management were addressed to representative farmers in each county. The replies, printed in the *Transactions* (I and II, 1841, 1842) do not cover every county and are often fragmentary, but nevertheless they supply source material of great value.

The New York survey was regarded as so successful that similar projects were set on foot by the societies in other States soon after their organization. The results are to be found in the following volumes of the State reports: Ohio, 1846-1850; Wisconsin, 1851-1853; New Hampshire, 1855; Maine, 1856; Illinois, 1857; Indiana, 1851-1857; Iowa, 1857.

The addresses delivered at the annual fairs of the State societies and some of those given at county fairs were printed in the State reports. Most of them are valueless, but occasionally the temptation to empty oratory was resisted and the speaker gave a meaty summary of local farming which is of great assistance in the interpretation of the multitude of scattered facts presented in the county surveys and elsewhere in these reports. The "original essays" which appeared regularly in the reports of Indiana, Illinois, and Wisconsin allowed opportunity for extended discussion of particular phases of farming, such as the use of machinery, the breeding of horses, or wool growing. The best of these essays were based on practical experience and are not to be confused nor compared with the paraphrases or quotations from text books to which the state secretary sometimes had recourse to fill his annual volume.

The talents and tastes of the editor, the State secretary, determined largely the character of the reports. The work of Henry S. Randall on the early volumes of the New York reports set a high standard for his successors. The works of Ezekiel Holmes and S. L. Goodale in Maine, and of Charles L. Flint in Massachusetts, were equally notable. In the reports of other States bad arrangement and careless indexing make difficult the use of many of the earlier, often the more valuable volumes. Massachusetts and Maine have published indexes to their series.¹ For other states, Miss Hasse's *Index of Economic Material* is of great assistance.

AGRICULTURAL PERIODICALS.

The most important unofficial sources for this period are the farm papers. In general, the material which they contain is similar to that found in the reports of the State boards and societies. Articles of a scientific or pseudo-scientific character dealing with the theories of soil fertility, with plant nutrition, etc., are of interest chiefly to the student of the development of agricultural science. For the economic historian the letters from correspondents are of outstanding importance. They show the condition of farming at a specific time and place, and often are of great assistance in revealing the forces which were operating to make agricultural history. The material which they present

¹ Mass. Board of Agric., *25th Annual Report*, 1877-78; Maine Dept. of Agric., *35th Annual Report*, 1892.

is of course scattered and fragmentary and can be utilized, even with the aid of the detailed index published each year, only by such students as have inclination and leisure for painstaking research.

The Cultivator, a monthly journal founded by Jesse Buel in 1834, was published continuously at Albany until 1853. Although it changed hands with the founder's death in 1839, the new owner, Luther Tucker, the proprietor of the *Genesee Farmer*, did not substantially modify its form or contents. Throughout the period *The Cultivator* was probably the best agricultural periodical published in the East. In 1853, Tucker began to issue in connection with *The Cultivator* a weekly which he called *The Country Gentleman*. Its purpose was to furnish the farmer, in addition to what was supplied by papers like *The Cultivator*, reading matter of a more general literary and news interest. The editors wrote in a prospectus:²

"We were led to its publication from the conviction that a large class of farmers and others interested in rural life wished something more in an agricultural journal than it was possible to furnish in the columns of a monthly. Horticulture and matters of rural taste, demanded more attention than the limits of the *Cultivator* would allow. The home education of farmers and their families, the social aspects of country life, the pleasures that slumber too often at the fire-sides of country residents, all present themselves as most desirable topics for discussion in an agricultural paper. A growing literary taste demands articles of a higher order than usually find their way into such journals. In a weekly journal all these subjects may be combined with strictly agricultural matter, in such way as to fit it for general perusal, and the improvement of the family circle, while the paper will be none the less valuable to the farmer. This combination, together with a concise summary of news, will supply a want that is felt to a considerable extent by country gentlemen and their families."

The new weekly was divided into four departments. The Farm, Domestic Economy, The Grazier, Horticultural Department, and Fireside Department, an arrangement which, in addition to the yearly index, greatly facilitates its use for historical purposes. A weekly feature, Farm Products Markets, gave a review of market conditions in a number of the larger domestic and foreign markets, with price quotations on staples such as flour, grain, provisions, cattle, and wool. In *The Cultivator*, whose monthly publication was continued in reduced form, selected articles of specialized agricultural interest were reprinted from *The Country Gentleman*.

Among a large number of western agricultural journals appearing in this period *The Prairie Farmer* is the best historical source. It was distinguished among its short-lived contemporaries for continuous publication under the same editorship for 16 years. Founded at Chicago as a monthly in 1840, it was published for two years by the Union Agricultural Society, an organization with members in several Western States. In 1843 the enterprise was taken over by John S. Wright and J. Ambrose Wight and a new name, *The Prairie Farmer*, was adopted. While following in general the plan of the older eastern journals, *The Prairie Farmer* has distinctive local color. Its style is less academic; it has a breezy quality designed, as was its low price, to appeal to "dirt farmers." In the prospectus for volume IV (1844) we read:

"Its character has become established as being an eminently practical paper, owing chiefly to the large proportion of matter supplied by its able correspondents, most of whom are themselves farmers, nearly three hundred in number, and residing in all

² *The Cultivator*, 3d series, I (1853), p. 9.

parts of the West. Almost the entire western press pronounce it, for a farmer in the West, the best agricultural paper published.

"The contents in general are as follows: Original correspondence; Editorial articles; Reviews of leading agricultural papers, presenting their more important parts; Mechanical department of two pages; Educational department of about two pages; departments entitled 'Household Affairs,' 'Orchard and Garden,' 'Veterinary'; and the last two pages will be occupied with prices current, reviews of the Chicago, eastern, southern, and foreign markets, and with miscellany."

In 1857 the *Prairie Farmer* was made a weekly, but the experiment was evidently not successful, and in 1858 it was absorbed by Emery's *Journal of Agriculture*. In its new form the older publication retained its name and was enlarged and improved.

COMMERCIAL PERIODICALS.

Two monthly periodicals afford information regarding commerce in agricultural products. *Hunt's Merchants' Magazine* (New York, 1839-1870) treated agricultural conditions from the business man's point of view. It frequently reprinted short articles from daily and weekly newspapers discussing farming conditions in widely separated sections. Price quotations of staples such as cotton, wheat, hogs, etc., in the chief markets were given sporadically.

De Bow's Review, although modeled after Hunt's publication, was more general in its material. Besides commercial affairs, it was designed as a "journal of agriculture, manufactures, internal improvements, and general literature." It was frankly a sectional journal, devoted to the interests of the South and the West. With two interruptions, from January to July 1849 and from 1862 to 1865, the *Review* covers the years 1846 to 1870. It is particularly valuable to the historian of western agriculture for the facts it furnishes regarding the close commercial relations between the western producers of grain and livestock and the southern cotton planters. Both of these publications are well indexed.

REPORTS OF BOARDS OF TRADE.

For the facts regarding the market distribution of staple farm products, especially in internal trade, the best sources are the annual reports of boards of trade and chambers of commerce. In addition to a review of the year's trade in the principal commodities, each issue usually contains statistics of receipts and shipments, and price quotations by yearly, monthly, or weekly averages. Particular attention was of course given in each city to the branches of trade in which its business men were especially interested. The reports of the Cincinnati Chamber of Commerce contain many valuable facts on pork packing, and on the shift from river to railroad transportation of the western surplus. In the Chicago reports the wheat-trade statistics are particularly important. The Buffalo Board of Trade was keenly interested in the eastward shipments of grain by canal and railroad. In its 1869 report there is a compilation of statistics for this trade covering the years 1836 to 1869. The Boston reports reflect the interest of merchants and manufacturers in the increasing dependence of New England on western breadstuffs. The wool trade, also, is given much attention in the Boston reports.

BIOGRAPHICAL MATERIAL.

R. S. Elliott, in his *Notes Taken in Sixty Years* (St. Louis, 1883), has recorded, in the midst of a helter-skelter of anecdotal material, a number of valuable facts regarding farm life and farm practice. Chapter VII contains his recollections of farming in central Pennsylvania about 1840. Of particular interest are his comments on the introduction of agricultural machinery. Later chapters describe pioneering in Iowa and the development of the grain trade in the West. C. W. Marsh, the inventor of the Marsh reaper, has told in his *Recollections* (1837 to 1900) the story of his boyhood experiences on a pioneer farm in Illinois. Chapter II gives a remarkably clear picture of prairie farm life, implements, food, housing, etc. Chapters XI and XII are devoted to the discussion of the introduction of reapers and to the events surrounding the invention of the Marsh machine.

SECONDARY MATERIAL.

TRAVELS, GAZETTEERS, AND STATISTICAL COMPILATIONS.

Owing to the greater abundance of source material in this period and its accessibility in collected form, less reliance has been placed on secondary accounts than in earlier periods. Gerhard's *Illinois as It Is* furnishes an example of the best type of gazetteer, a combined history, geography, and statistical description. It includes two chapters (pp. 271-351), dealing specifically with farming. The author was the editor of a German newspaper published in New York. His statements are based partly upon his own observations during a tour through Illinois in 1855, and were verified and supplemented by the opinions and experience of a large number of resident farmers. He utilized all the available literature, including not only books and pamphlets, but also secondary material, the files of agricultural journals, and of local newspapers. The book is well written and well arranged. The keen interest of the author in the economic aspects of farming is shown by his discussion of costs and prices. He devotes a chapter (pp. 372-375) to market prices, in which he tabulates the prices of 20 or more farm products for January 1856, as quoted in the local newspapers of about 40 Illinois towns.

The *Gazetteer of Michigan*, compiled by John T. Blois in 1838, follows the standard form, giving a description of local subdivisions in alphabetical order. The information on the means of communication and transportation, roads, canals, and steamships, is more valuable than the brief description of agriculture. In the appendix there are the fragmentary results of an attempted agricultural census of 1837.

Hall's *Notes on the Western States* (Philadelphia, 1838) is an enlarged edition of his *Statistics of the West* (Cincinnati, 1836). It is particularly valuable for its discussion of the commerce of Western cities. Chapters V to VIII (pp. 69-109) are devoted to a description of the prairies and to the discussion of theories of their origin.

James Caird, member of the English House of Commons and the author of several works on agricultural topics, traveled extensively in Illinois in 1858 and published his observations in *Prairie Farming in America*, (1859). It seems probable that he was engaged by the Illinois Central Railroad to

assist in exploiting its lands by familiarizing prospective English emigrants with agricultural conditions in Illinois.³

TREATISES AND HANDBOOKS ON FARMING.

Judge Jesse Buel, the author of *The Farmer's Companion*, was doubly qualified for his work, having been both the editor of an agricultural journal (*The Cultivator*) and a successful practical farmer as well. The volume, which was designed as a text-book, is laid out in methodical fashion. It is composed largely of quotations and paraphrases from the best English works, supplemented by material from the files of *The Cultivator*. In this, as in almost all works of its kind, the description of what is, i. e., of existing conditions of farming, is subordinated to the discussion of what ought to be.

Beatty's *Essays on Practical Agriculture* presents a marked contrast to Buel's work. It is composed of a series of essays on the cultivation of various crops, with particular reference to farming in Kentucky, the author's native State. The historical sketch of Kentucky agriculture, the first of the essays, is well done. Beatty's work shows a wide reading of the best English and American agricultural literature. His keen interest in the economic aspects of farming, in markets, prices and transportation costs, is evident in his chapter on the Advantages of Manufactures to Agriculture.

MONOGRAPHS.

Hibbard's *History of Agriculture in Dane County, Wisconsin*, deals in chapters I to VI with pioneer conditions and the one-crop period which ended in 1860. This is a scholarly work compiled from source material, chiefly from local newspapers. It gives a clear picture of the farming of the period with emphasis on its social and economic aspects. *The Wheat Plant*, by John H. Klippart, secretary of the Ohio State Board of Agriculture, is an exhaustive treatise of international repute, in which the author has included a vast amount of information regarding the origin, history, and botany of wheat. Chapter XIX, Wheat in Ohio, discusses the varieties grown in that State in 1860 and gives facts regarding their introduction.

The history of one of the most important kinds of agricultural machines is traced by M. F. Miller in his *The Evolution of Reaping Machines*. He shows clearly the European origin of several of the most important features of the American reaper. His monograph, compiled from secondary material, is well arranged. Its value is enhanced by a number of fine illustrations of the machines described. The perennial controversy between the adherents of Hussey and McCormick regarding the claims to the invention of the reaper is renewed in Greene's *Obed Hussey* (Rochester, 1912). The book is a compilation of original documents, such as contemporary newspaper articles, personal correspondence, and copies of Patent Office records which tend to support Hussey's claim.

³ Buck, *Travel and Description, 1765-1865*, in Illinois Hist. Soc., *Collections*, IX, 233.

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MISCELLANEOUS STATISTICS.

TABLE 65.—*Prices of farm products and general prices.*

(1825 = 100.)

[Sources: See page 191.]

Year.	Index No. of general prices.	Index No. of farm products.	Year.	Index No. of general prices.	Index No. of farm products.	Year.	Index No. of general prices.	Index No. of farm products.
1801	155.5	183.8	1821	102.3	94.7	1841	95.3	99.3
1802	127.7	130.7	1822	105.3	107.0	1842	85.3	90.1
1803	131.2	128.2	1823	100.1	104.0	1843	80.3	79.4
1804	140.6	139.8	1824	98.9	103.8	1844	85.8	80.1
1805	144.9	159.7	1825	100.0	100.0	1845	89.4	92.8
1806	141.6	155.4	1826	99.4	106.7	1846	91.1	98.2
1807	134.3	146.7	1827	99.6	99.6	1847	98.8	113.2
1808	131.0	125.2	1828	95.2	89.7	1848	89.4	94.4
1809	145.0	132.9	1829	94.1	90.2	1849	90.5	93.4
1810	150.4	153.2	1830	91.4	91.0	1850	94.6	99.3
1811	145.7	147.4	1831	96.7	99.6	1851	96.7	114.7
1812	148.1	136.9	1832	98.1	104.7	1852	99.6	119.7
1813	172.4	172.8	1833	96.8	110.6	1853	108.3	125.0
1814	214.8	212.4	1834	90.1	97.2	1854	120.5	140.8
1815	168.6	170.1	1835	103.8	116.2	1855	130.5	147.2
1816	143.6	180.1	1836	115.7	136.5	1856	129.8	124.9
1817	145.4	199.9	1837	114.7	137.7	1857	135.5	139.2
1818	141.5	179.5	1838	110.2	126.1	1858	114.5	115.2
1819	124.7	137.0	1839	115.2	134.6	1859	117.2	123.7
1820	106.9	109.5	1840	98.3	113.8	1860	115.2	113.5

TABLE 66.—*Exports of wheat and corn, 1791-1846*

[Source: U. S. Commerce and Navigation Reports. Also found in Senate Report, 53d Congress, 2d Session, 1893-94, vol. IV, part II, pp. 12, 14.]

Year.	Wheat ^a (1000 bu.).	Corn ^b (1000 bu.).	Year.	Wheat ^a (1000 bu.).	Corn ^b (1000 bu.).	Year.	Wheat ^a (1000 bu.).	Corn ^b (1000 bu.).
1791	3,807	1,995	1810	3,919	1,401	1829	3,772	1,593
1792	4,564	2,176	1811	6,719	3,381	1830	5,569	1,025
1793	6,286	1,386	1812	6,550	2,403	1831	8,538	1,402
1794	4,504	1,702	1813	5,963	1,721	1832	3,980	1,038
1795	3,234	2,345	1814	870	167	1833	4,333	1,024
1796	3,295	1,791	1815	3,900	1,120	1834	3,796	902
1797	2,336	1,096	1816	3,333	1,434	1835	3,555	1,423
1798	2,569	1,460	1817	6,753	815	1836	2,276	688
1799	2,347	1,465	1818	5,406	2,155	1837	1,452	789
1800	2,966	2,081	1819	3,460	1,628	1838	2,023	860
1801	5,201	2,819	1820	5,319	1,119	1839	4,251	825
1802	5,483	1,938	1821	4,778	1,134	1840	10,260	1,399
1803	6,590	2,614	1822	3,730	1,102	1841	7,690	1,465
1804	3,772	2,390	1823	3,409	1,315	1842	6,594	1,437
1805	3,517	1,326	1824	4,506	1,390	1843 ^c	5,464	1,827
1806	3,609	1,498	1825	3,681	1,619	1844	7,033	1,817
1807	6,797	1,158	1826	3,905	1,140	1845	5,768	1,916
1808	1,274	373	1827	3,930	1,503	1846	11,916	3,021
1809	4,202	751	1828	3,883	1,403			

^a Including flour, equivalent; 4½ bus. wheat = 196 lbs. flour.

^b Including cornmeal equivalent; 4 bus. corn = 1 bbl. cornmeal; 1 bu. cornmeal = 1.142857 or 1 1-7 bu. corn.

^c Official figures covering only 9 months have been increased by one-third.

TABLE 67.—Exports of animal products.

[Source: U. S. Commerce and Navigation Reports. Also found in Senate Report, 53d Congress, 2d Session, 1893-94, vol. IV, part II, pp. 36, 38, 42.]

Year.	Pork, hams, bacon and lard (1000 lbs.)	Beef and tallow (1000 lbs.)	Butter and cheese (1000 lbs.)	Year.	Pork, hams, bacon and lard (1000 lbs.)	Beef and tallow (1000 lbs.)	Butter and cheese (1000 lbs.)
1791	6,145	12,791	1,054	1819	8,513	7,029	2,060
1792	8,720	15,020	785	1820	45,071	10,724	2,292
1793	8,831	15,331	661	1821	18,933	13,459	1,835
1794	12,139	20,360	2,773	1822	18,951	19,586	1,872
1795	20,908	19,235	3,933	1823	18,810	13,019	1,763
1796	17,998	18,692	4,349	1824	19,908	13,311	2,319
1797	9,841	10,388	2,512	1825	24,521	18,138	2,672
1798	8,605	17,901	2,497	1826	26,867	15,001	1,912
1799	13,317	18,284	2,479	1827	23,555	18,439	1,790
1800	13,900	15,024	2,736	1828	21,098	13,750	1,873
1801	18,567	15,103	4,505	1829	21,368	10,711	1,886
1802	19,194	12,337	3,694	1830	17,285	9,902	1,588
1803	23,059	15,646	3,681	1831	18,694	12,834	2,860
1804	26,776	27,015	3,776	1832	27,293	11,724	2,894
1805	13,797	23,120	2,499	1833	30,616	13,541	2,559
1806	10,137	23,538	2,582	1834	27,109	10,007	1,905
1807	10,982	16,895	2,843	1835	24,495	8,097	1,572
1808	3,939	4,025	1,211	1836	12,402	10,489	848
1809	10,984	5,716	1,955	1837	12,271	5,784	693
1810	10,026	9,551	2,362	1838	14,676	5,061	1,160
1811	10,668	15,393	2,823	1839	17,430	3,356	944
1812	6,895	8,568	2,322	1840	22,318	4,210	1,901
1813	5,159	8,749	696	1841	40,050	12,287	5,534
1814	1,460	4,062	370	1842	58,628	16,754	4,512
1815	3,556	2,664	1,313	1843 ^a	57,358	20,069	9,131
1816	5,474	6,670	1,354	1844	61,959	31,210	10,595
1817	4,160	7,595	1,065	1845	55,102	30,330	11,529
1818	5,477	7,390	1,192	1846	62,934	40,280	12,112

^a Official figures covering only 9 months have been increased by one-third.

TABLE 68.—Imports of animal products, 1822 to 1846.

[Source: U. S. Commerce and Navigation Reports.]

Year.	Meat products ^a (lbs.).	Butter and cheese (lbs.).	Hides and skins, value.	Year.	Meat products ^a (lbs.).	Butter and cheese (lbs.).	Hides and skins, value.
1822	3,476,372	50,546	\$2,041,463	1835	1,759,829	147,552	\$3,369,888
1823	1,156,983	86,825	2,084,082	1836	589,351	359,615	3,511,463
1824	296,307	44,610	2,142,168	1837	732,506	272,854	3,306,681
1825	706,195	32,381	2,221,868	1838	2,531,847	137,523	2,036,629
1826	1,008,921	46,141	2,825,526	1839	1,614,572	269,521	3,158,029
1827	1,347,466	40,915	1,480,349	1840	1,184,194	226,286	2,756,214
1828	2,158,038	102,482	1,804,202	1841	307,012	121,065	3,457,248
1829	1,455,197	179,530	2,252,609	1842	254,739	82,864	4,067,816
1830	668,948	87,338	2,409,850	1843 ^b	531,318	46,113	3,493,087
1831	519,124	60,485	3,057,543	1844	292,753	58,800	.....
1832	341,785	202,375	4,680,128	1845	227,515	68,387	.....
1833	1,740,389	240,073	3,588,819	1846	200,418	56,501	.....
1834	2,331,019	197,285	3,296,688				

^a Beef, pork, lard, tallow, and bacon.

^b Official figures covering only 9 months have been increased by one-third.

TABLE 69.—*Wages of farm labor and prices of farm products, 1801 to 1836.*

[Sources: The wage data are from Wright's *Wages and Prices, 1752-1860*, in Mass. Bureau of Statistics of Labor, 16th Annual Report (1885), parts III and IV, p. 317. The index number of prices of farm products is that quoted and described in Table 65. See footnote, p. 438.]

Year.	Wages per day of agricultural labor. ^a	Index No. of wages. ^b	Index No. of prices of farm products. ^b	Year.	Wages per day of agricultural labor. ^a	Index No. of wages. ^b	Index No. of prices of farm products. ^b
1801	.577	77.6	183.8	1819	.533	71.6	137.0
1802	.622	83.6	130.7	1820	.750	100.8	109.5
1803	.517	69.5	128.2	1821	.704	94.6	94.7
1804	.806	108.3	139.8	1822	.771	103.6	107.0
1805	.958	128.8	159.7	1823	.940	126.3	104.0
1806	.932	125.3	155.4	1824	....	....	....
1807	.692	93.0	146.7	1825	.744	100.0	100.0
1808	.865	116.3	125.2	1826	.617	82.9	106.7
1809	.540	72.6	132.9	1827	.809	108.7	99.6
1810	.936	125.8	153.2	1828	.775	104.2	89.7
1811	.592	79.6	147.4	1829	....	....	90.2
1812	.854	114.8	136.9	1830	....	....	91.0
1813	.958	128.8	172.8	1831	.875	118.3	99.6
1814	.699	94.0	212.4	1832	....	....	104.7
1815	.868	116.7	170.1	1833	....	....	110.6
1816	.752	101.0	180.1	1834	....	....	97.2
1817	.827	111.2	199.9	1835	.875	118.3	116.2
1818	1.490	200.3	179.5	1836	....	117.6	136.5

^a Without board.

^b 1825 = 100.

TABLE 70.—*Wool prices per pound in New York, 1816 to 1846.*

[Sources: New York Shipping and Commercial List, 1816-1824; for the years 1824-1846, quotations of Mauger & Avery, printed in Wright, *Wool Growing and the Tariff*, p. 347.]

Year and month.	Merino.	Half blood.	Common.	Year and month.	Merino.	Half blood.	Common.
	<i>cts.</i>	<i>cts.</i>	<i>cts.</i>		<i>cts.</i>	<i>cts.</i>	<i>cts.</i>
1816 Jan. ...	106	56	50	1820 July ...	67	37	30
Apr. ...	100	50	40	Oct. ...	67	37	30
July ...	100	50	40	1821 Jan. ...	67	37	30
Oct. ...	68	47	40	Apr. ...	67	42	30
1817 Jan. ...	68	47	37	July ...	57	35	32
Apr. ...	68	47	37	Oct ...	72	42	40
July ...	85	50	37	1822 Jan. ...	72	42	40
Oct. ...	80	50	32	Apr. ...	72	42	40
1818 Jan. ...	77	45	32	July ...	65	45	37
Apr. ...	77	45	32	Oct. ...	62	45	37
July ...	80	45	32	1823 Jan. ...	62	45	37
Oct. ...	80	45	40	Apr. ...	62	45	35
1819 Jan. ...	80	45	40	July ...	62	45	35
Apr. ...	80	45	40	Oct. ...	62	45	35
July ...	80	45	40	1824 Jan. ...	52	37	32
Oct. ...	62	42	35	Apr. ...	52	37	32
1820 Jan. .	77	42	40	July ...	58	42	32
Apr. ...	77	42	40	Oct. ...	58	42	32

TABLE 70.—Wool prices per pound in New York, 1816 to 1846.—Continued.

Year and month.	Fine.	Medium.	Coarse.	Year and month.	Fine.	Medium.	Coarse.
	<i>cts.</i>	<i>cts.</i>	<i>cts.</i>		<i>cts.</i>	<i>cts.</i>	<i>cts.</i>
1824 ^a Jan. ...	68	53	40	1835 July ...	63	56	42
Apr. ...	70	46	31	Oct. ...	65	60	45
July ...	55	40	30	1836 Jan. ...	65	60	45
Oct. ...	60	40	30	Apr. ...	68	62	47
1825 Jan. ...	60	43	32	July ...	70	60	50
Apr. ...	60	42	33	Oct. ...	70	60	50
July ...	50	41	32	1837 Jan. ...	72	63	48
Oct. ...	50	42	36	Apr. ...	68	56	46
1826 Jan. ...	55	43	38	July ...	52	52	36
Apr. ...	52	46	41	Oct. ...	49	40	31
July ...	37	30	26	1838 Jan. ...	50	42	35
Oct. ...	43	37	32	Apr. ...	50	42	35
1827 Jan. ...	36	32	28	July ...	46	36	30
Apr. ...	45	34	30	Oct. ...	56	48	37
July ...	37	31	25	1839 Jan. ...	56	48	38
Oct. ...	43	32	25	Apr. ...	56	48	38
1828 Jan. ...	42	30	25	July ...	57	48	40
Apr. ...	44	36	28	Oct. ...	60	55	44
July ...	48	38	33	1840 Jan. ...	50	45	38
Oct. ...	48	40	32	Apr. ...	49	43	36
1829 Jan. ...	54	45	35	July ...	45	39	33
Apr. ...	45	35	32	Oct. ...	46	38	33
July ...	46	36	32	1841 Jan. ...	52	45	35
Oct. ...	37	30	27	Apr. ...	53	46	37
1830 Jan. ...	40	35	30	July ...	50	44	34
Apr. ...	50	38	32	Oct. ...	48	42	33
July ...	60	50	40	1842 Jan. ...	48	42	35
Oct. ...	70	60	48	Apr. ...	46	40	32
1831 Jan. ...	70	60	48	July ...	43	37	30
Apr. ...	70	60	50	Oct. ...	38	31	25
July ...	75	65	60	1843 Jan. ...	35	30	25
Oct. ...	70	60	50	Apr. ...	33	28	25
1832 Jan. ...	65	55	44	July ...	35	30	26
Apr. ...	60	52	42	Oct. ...	36	32	26
July ...	50	42	30	1844 Jan. ...	37	30	26
Oct. ...	50	40	30	Apr. ...	43	36	30
1833 Jan. ...	55	41	33	July ...	45	37	32
Apr. ...	63	53	38	Oct. ...	50	40	33
July ...	61	54	40	1845 Jan. ...	47	40	31
Oct. ...	65	55	45	Apr. ...	45	38	32
1834 Jan. ...	70	60	48	July ...	40	36	30
Apr. ...	67	56	44	Oct. ...	38	35	28
July ...	60	50	40	1846 Jan. ...	40	35	30
Oct. ...	62	50	40	Apr. ...	38	33	28
1835 Jan. ...	63	50	40	July ...	38	32	27
Apr. ...	65	60	45	Oct. ...	36	30	22

^a The grades quoted by Mauger & Avery were fine, medium and coarse.

TABLE 71.—Imports of wool, 1822 to 1846.

[Sources: U. S. Commerce and Navigation Reports; and Wright, *Wool Growing and the Tariff*, 340 for the years 1822-28.]

Year.	Total imports (1000 lbs.).	Coarse Wool. ^a	Fine Wool. ^b	Year.	Total imports (1000 lbs.).	Coarse Wool. ^a	Fine Wool. ^b
1822	1,715	.....	.....	1835	7,290	5,544	1,747
1823	1,673	.....	.....	1836	12,688	11,033	1,655
1824	1,300	.....	.....	1837	10,408	9,480	928
1825	2,147	.....	.....	1838	6,968	6,551	417
1826	2,638	.....	.....	1839	7,925	7,399	527
1827	3,331	.....	.....	1840	9,899	9,304	595
1828	2,453	.....	.....	1841	15,006	14,410	597
1829	1,494	.....	.....	1842	11,421	10,637	784
1830	670	.....	.....	1843 ^c	4,758	4,512	246
1831	5,623	.....	.....	1844	14,008	13,809	200
1832	4,043	.....	.....	1845	23,833	23,382	451
1833	950	.....	950	1846	16,558	16,428	130
1834	591	.....	591				

^a Value not exceeding 8 cents per lb.; after 1842, 7 cents.

^b Value exceeding 8 cents per lb.; after 1842, 7 cents.

^c Official figures covering only 9 months have been increased by one-third.

TABLE 72.—Price of flour, 1800 to 1855.

[Average annual export price at New York, from Klippart, *The Wheat Plant*, p. 328.]

Year.	Average annual price.	Year.	Average annual price.	Year.	Average annual price.	Year.	Average annual price.
1800	\$10.00	1814	\$14.50	1828	\$5.50	1842	\$6.00
1801	13.00	1815	9.25	1829	5.00	1843	4.50
1802	9.00	1816	7.37	1830	7.25	1844	4.75
1803	7.00	1817	14.75	1831	5.62	1845	4.51
1804	7.75	1818	10.25	1832	5.87	1846	5.18
1805	13.00	1819	8.00	1833	5.50	1847	5.95
1806	7.50	1820	5.37	1834	5.50	1848	6.22
1807	8.25	1821	4.25	1835	6.00	1849	5.35
1808	6.00	1822	7.00	1836	7.50	1850	5.00
1809	7.50	1823	7.75	1837	10.25	1851	4.77
1810	8.25	1824	6.62	1838	9.50	1852	4.24
1811	10.50	1825	5.37	1839	6.75	1853	5.60
1812	10.75	1826	5.25	1840	5.37	1854	7.88
1813	13.00	1827	8.00	1841	5.20	1855	10.10

TABLE 73.—Imports of wheat, 1824 to 1846.
[Source: U. S. Commerce and Navigation Reports.]

Year.	Wheat.	Flour.	Flour Equiv. of wheat. ^a	Total wheat.
	<i>bu.</i>	<i>cwt.</i>	<i>bu.</i>	<i>bu.</i>
1824	488	370	849.5	1,337.5
1825	1,065	118	270.9	1,335.9
1826	3,448	33	75.8	3,523.8
1827	1,064	47	107.9	1,171.9
1828	852	6	13.8	865.8
1829	263	151	346.7	609.7
1830	422	201	461.5	883.5
1831	620	5	11.5	631.5
1832	1,168	9	20.7	1,188.7
1833	1,600	37	84.9	1,684.9
1834	1,225	32	73.5	1,298.5
1835	238,769	28,483	65,394.6	304,163.6
1836	583,898	66,731	153,208.9	737,106.9
1837	3,921,259	30,709	70,505.4	3,991,764.4
1838	894,536	12,731	29,229.3	923,765.3
1839	32,884	7,348	16,870.4	49,754.4
1840	593	329	755.4	1,348.4
1841	632	86	197.4	829.4
1842	4,082	28	64.3	4,146.3
1843 ^b	16,107	75	172.2	16,279.2
1844	446	243	557.9	1,003.9
1845	281	14	32.1	313.1
1846	512	62	142.3	651.3

^a Converted at rate of 4½ bushels of wheat to 196 pounds of flour.

^b Official figures covering only 9 months have been increased by one-third.

TABLE 74.—Hops: Quantity inspected and prices in Massachusetts, 1806 to 1840.
[From 4th Report, Agric. of Mass. (1841), pp. 490-491.]

Year.	Inspections.	Price per lb.	Year.	Inspections.	Price per lb.	Year.	Inspections.	Price per lb.
	<i>lbs.</i>	<i>cts.</i>		<i>lbs.</i>	<i>cts.</i>		<i>lbs.</i>	<i>cts.</i>
1806	278,221	15	1818	616,366	14	1830	566,489	11
1807	369,496	11	1819	656,902	5	1831	505,251	10½
1808	322,976	10	1820	782,663	6½	1832	400,543	23½
1809	280,063	10	1821	561,063	7½	1833	698,724	16
1810	299,500	27	1822	548,709	10½	1834	722,596	14
1811	416,050	7½	1823	618,444	20	1835	695,800	9½
1812	322,913	12½	1824	575,030	10½	1836	847,590	7½
1813	243,242	22	1825	621,241	15	1837	623,648	6
1814	179,640	25	1826	409,007	15	1838	359,992	15
1815	331,673	30	1827	752,140	7	1839	233,461	15
1816	287,374	32	1828	662,334	6	1840	279,833	30
1817	729,862	34	1829	541,632	8½			

TABLE 75.—*Urban concentration, 1840.*

[Towns and cities of over 8,000 population. Source: U. S. Census, 1840.]

State and town or city.	Popula- tion.	State and town or city.	Popula- tion.
Maine:		New Jersey:	
Bangor	8,627	Newark	17,290
Portland	15,218	Pennsylvania:	
Massachusetts:		Philadelphia and Suburbs	205,850
Roxbury	9,089	Lancaster	8,417
Boston	93,383	Reading	8,410
Charlestown	11,484	Alleghany	10,089
Cambridge	8,409	Pittsburgh	21,115
Lowell	20,796	Delaware:	
Lynn	9,367	Wilmington	8,367
Nantucket	9,012	Ohio:	
New Bedford	12,087	Cincinnati	46,338
Salem	15,082	Missouri:	
Springfield	10,985	St. Louis	16,469
Rhode Island:		Maryland:	
Newport	8,333	Baltimore	102,313
Providence	23,171	Kentucky:	
Smithfield	9,534	Louisville	21,210
Connecticut:		Virginia:	
Hartford	9,468	Norfolk	10,920
New Haven	12,923	Petersburg	11,136
New York:		Richmond	20,153
Albany	33,721	South Carolina:	
Buffalo	18,213	Charleston	29,261
Rochester	20,191	Georgia:	
Troy	19,334	Savannah	11,214
Utica	12,782	Alabama:	
Brooklyn	36,233	Mobile	12,672
Fishkill	10,437	Michigan:	
Newburgh	8,933	Detroit	9,102
New York	312,710	District of Columbia:	
Poughkeepsie	10,006	Alexandria	8,459
		Washington	23,364

TABLE 76.—*Prices of wheat (winter) per bushel, at New York, 1840 to 1860.*[Source: *Aldrich Report* (1893), part 2, p. 63.]

Year and month.	Price.	Year and month.	Price.	Year and month.	Price.
1840 Jan.	\$1.230	1847 Jan.	\$1.130	1854 Jan.	\$1.900
Apr.	1.120	Apr.	1.575	Apr.	2.110
July	1.090	July	1.575	July	2.250
Oct.	1.030	Oct.	1.235	Oct.	1.725
1841 Jan.	1.045	1848 Jan.	1.360	1855 Jan.	2.380
Apr.	0.975	Apr.	1.460	Apr.	2.500
July	1.275	July	1.210	July	2.525
Oct.	1.425	Oct.	1.270	Oct.	1.800
1842 Jan.	1.250	1849 Jan.	1.260	1856 Jan.	1.930
Apr.	1.255	Apr.	1.210	Apr.	1.850
July	1.270	July	1.240	July	1.675
Oct.	0.910	Oct.	1.210	Oct.	1.575
1843 Jan.	0.925	1850 Jan.	1.265	1857 Jan.	1.590
Apr.	1.075	Apr.	1.275	Apr.	1.650
July	1.190	July	1.500	July	1.950
Oct.	0.955	Oct.	1.150	Oct.	1.140
1844 Jan.	1.020	1851 Jan.	1.215	1858 Jan.	1.200
Apr.	1.045	Apr.	1.125	Apr.	1.190
July	0.900	July	1.080	July	1.115
Oct.	0.915	Oct.	0.945	Oct.	1.165
1845 Jan.	0.955	1852 Jan.	1.115	1859 Jan.	1.300
Apr.	1.015	Apr.	1.100	Apr.	1.530
July	1.030	July	1.125	July	1.650
Oct.	0.975	Oct.	1.090	Oct.	1.350
1846 Jan.	1.300	1853 Jan.	1.320	1860 Jan.	1.410
Apr.	1.180	Apr.	1.230	Apr.	1.450
July	0.920	July	1.290	July	1.410
Oct.	1.085	Oct.	1.590	Oct.	1.265

TABLE 77.—*Prices of wheat (No. 2 winter) per bushel, at Chicago, 1840 to 1860.*[Source: *Aldrich Report* (1893), part 2, p. 61.]

Year and month.	Price.	Year and month.	Price.	Year and month.	Price.
1840 Apr.	\$0.595	1848 July	\$0.975	1855 Jan.	\$1.260
July ....	.595	Oct. ....	.625	Apr.	1.525
Oct. ....	.850	1849 Jan. ....	.685	July	1.725
1841 Jan. ....	.595	Apr.	1.125	Oct.	1.500
Apr. ....	.520	July ....	.705	1856 Jan.	1.450
July ....	.650	Oct. ....	.760	Apr.	1.500
1842 Oct. ....	.525	1850 Jan. ....	.775	July	1.105
1843 Jan. ....	.465	Apr. ....	.775	Oct.	1.210
Apr. ....	.515	July	1.100	1857 Jan.	1.105
July ....	.805	Oct. ....	.700	Apr.	1.125
1844 Apr. ....	.650	1851 Jan. ....	.675	July	1.500
July ....	.630	Oct. ....	.625	Oct.	1.075
Oct. ....	.650	1852 Jan. ....	.575	1858 Jan. ....	.700
1845 Jan. ....	.710	Apr. ....	.650	Apr. ....	.750
Apr. ....	.780	July ....	.720	Oct.	1.035
1846 July ....	.515	Oct. ....	.660	1859 Jan.	1.065
Oct. ....	.600	1853 Jan. ....	.820	Apr.	1.315
1847 Jan. ....	.560	Apr. ....	.750	July	1.255
Apr. ....	.675	July ....	.840	Oct. ....	.870
July ....	.575	Oct.	1.065	1860 Jan.	1.090
Oct. ....	.730	1854 Jan.	1.105	Apr.	1.150
1848 Jan. ....	.825	Apr.	1.160	July	1.150
Apr. ....	.875	July	1.175	Oct.	1.000
		Oct.	1.350		

TABLE 78.—Prices of beeves (good to prime, live weight) per 100 pounds, at New York, 1840-1860.

[Source: Aldrich Report (1893), part 2, p. 25.]

Year and month.	Price.	Year and month.	Price.	Year and month.	Price.
1840 Jan.	\$3.64	1847 Jan.	\$3.78	1854 Jan.	\$5.32
Apr.	3.50	Apr.	4.20	Apr.	6.16
July	4.20	July	4.48	July	5.04
Oct.	3.50	Oct.	4.06	Oct.	5.18
1841 Jan.	4.20	1848 Jan.	4.48	1855 Jan.	5.88
Apr.	4.34	Apr.	4.62	Apr.	7.00
July	3.50	July	4.06	July	5.88
Oct.	3.22	Oct.	3.22	Oct.	5.60
1842 Jan.	3.00	1849 Jan.	4.76	1856 Jan.	6.16
Apr.	3.64	Apr.	5.32	Apr.	6.44
July	3.22	July	4.48	July	5.32
Oct.	3.08	Oct.	4.32	Oct.	5.88
1843 Jan.	3.36	1850 Jan.	4.48	1857 Jan.	6.72
Apr.	3.08	Apr.	4.48	Apr.	6.16
July	3.30	July	4.48	July	5.88
Oct.	3.36	Oct.	4.20	Oct.	6.16
1844 Jan.	3.24	1851 Jan.	4.20	1858 Jan.	5.60
Apr.	3.50	Apr.	5.04	Apr.	5.32
July	3.08	July	4.48	July	4.20
Oct.	3.08	Oct.	4.06	Oct.	5.04
1845 Jan.	3.30	1852 Jan.	4.76	1859 Jan.	5.46
Apr.	3.64	Apr.	5.60	Apr.	6.16
July	3.64	July	4.48	July	6.16
Oct.	3.08	Oct.	4.76	Oct.	5.32
1846 Jan.	3.36	1853 Jan.	5.04	1860 Jan.	5.60
Apr.	4.20	Apr.	5.60	Apr.	5.88
July	3.22	July	5.60	July	5.04
Oct.	3.78	Oct.	5.60	Oct.	5.32

TABLE 79.—Prices of beeves (good to choice, live weight) per 100 pounds, at Cincinnati, 1843 to 1860.

[Source: Aldrich Report (1893), part 2, p. 24.]

Year and month.	Price.	Year and month.	Price.	Year and month.	Price.
1843 July	\$2.75	1850 Apr.	\$5.25	1855 Oct.	\$4.00
Oct.	2.25	Oct.	3.75	1856 Jan.	3.75
1844 Apr.	3.25	1851 Jan.	4.75	Apr.	3.50
July	2.75	Apr.	5.75	July	3.87
1845 Jan.	3.00	July	5.00	Oct.	3.75
July	3.75	Oct.	5.25	1857 Jan.	4.00
Oct.	3.50	1852 Jan.	4.75	Apr.	5.25
1846 Jan.	3.25	Apr.	6.25	July	5.00
Apr.	3.15	July	5.50	Oct.	4.00
July	3.75	Oct.	5.25	1858 Jan.	4.00
Oct.	3.50	1853 Jan.	6.50	Apr.	4.00
1847 Jan.	3.50	Apr.	6.50	July	3.75
Apr.	4.40	July	7.00	Oct.	3.25
July	4.50	Oct.	4.35	1859 Jan.	4.25
Oct.	4.25	1854 Jan.	4.50	Apr.	5.75
1848 Jan.	3.15	Apr.	7.50	July	5.00
Apr.	4.25	July	6.10	Oct.	3.50
July	4.25	Oct.	5.25	1860 Jan.	3.75
1849 Jan.	4.50	1855 Jan.	6.25	Apr.	4.25
Apr.	4.15	Apr.	9.50	July	3.25
1850 Jan.	4.00	July	7.25	Oct.	3.25

TABLE 80.—*Prices of butter per pound, at Boston, 1840-1860.*[Source: *Aldrich Report* (1893), part 2, p. 73.]

Year and month.	Price.	Year and month.	Price.	Year and month.	Price.
1840 Jan.	\$0.180	1847 Jan.	\$0.180	1854 Jan.	\$0.170
Apr. ....	.140	Apr. ....	.185	Apr. ....	.210
July ....	.160	July ....	.170	July ....	.180
Oct. ....	.160	Oct. ....	.200	Oct. ....	.235
1841 Jan. ....	.160	1848 Jan. ....	.170	1855 Jan. ....	.245
Apr. ....	.175	Apr. ....	.190	Apr. ....	.275
July ....	.175	July ....	.160	July ....	.190
Oct. ....	.175	Oct. ....	.170	Oct. ....	.215
1842 Jan. ....	.175	1849 Jan. ....	.180	1856 Jan. ....	.255
Apr. ....	.175	Apr. ....	.170	Apr. ....	.215
July ....	.175	July ....	.170	July ....	.165
Oct. ....	.180	Oct. ....	.190	Oct. ....	.220
1843 Jan. ....	.150	1850 Jan. ....	.170	1857 Jan. ....	.235
Apr. ....	.150	Apr. ....	.170	Apr. ....	.255
July ....	.140	July ....	.160	July ....	.215
Oct. ....	.150	Oct. ....	.170	Oct. ....	.220
1844 Jan. ....	.150	1851 Jan. ....	.175	1858 Jan. ....	.190
Apr. ....	.185	Apr. ....	.175	Apr. ....	.230
July ....	.185	July ....	.155	July ....	.175
Oct. ....	.185	Oct. ....	.165	Oct. ....	.190
1845 Jan. ....	.150	1852 Jan. ....	.190	1859 Jan. ....	.235
Apr. ....	.150	Apr. ....	.245	Apr. ....	.215
July ....	.170	July ....	.170	July ....	.180
Oct. ....	.170	Oct. ....	.245	Oct. ....	.205
1846 Jan. ....	.195	1853 Jan. ....	.270	1860 Jan. ....	.210
Apr. ....	.150	Apr. ....	.210	Apr. ....	.170
July ....	.150	July ....	.170	July ....	.170
Oct. ....	.165	Oct. ....	.200	Oct. ....	.200

TABLE 81.—*Prices of cheese per pound, at Boston, 1840 to 1860.*[Source: *Aldrich Report* (1893), part 2, p. 74.]

Year and month.	Price.	Year and month.	Price.	Year and month.	Price.
1840 Jan.	\$0.090	1847 Jan.	\$0.070	1854 Jan.	\$0.105
Apr. ....	.090	Apr. ....	.075	Apr. ....	.110
July ....	.090	July ....	.075	July ....	.080
Oct. ....	.090	Oct. ....	.075	Oct. ....	.080
1841 Jan. ....	.090	1848 Jan. ....	.065	1855 Jan. ....	.095
Apr. ....	.090	Apr. ....	.065	Apr. ....	.115
July ....	.070	July ....	.070	July ....	.070
Oct. ....	.065	Oct. ....	.070	Oct. ....	.075
1842 Jan. ....	.070	1849 Jan. ....	.070	1856 Jan. ....	.085
Apr. ....	.070	Apr. ....	.070	Apr. ....	.100
July ....	.070	July ....	.060	July ....	.075
Oct. ....	.070	Oct. ....	.060	Oct. ....	.070
1843 Jan. ....	.065	1850 Jan. ....	.060	1857 Jan. ....	.100
Apr. ....	.065	Apr. ....	.070	Apr. ....	.130
July ....	.065	July ....	.070	July ....	.085
Oct. ....	.060	Oct. ....	.065	Oct. ....	.075
1844 Jan. ....	.050	1851 Jan. ....	.050	1858 Jan. ....	.065
Apr. ....	.060	Apr. ....	.055	Apr. ....	.080
July ....	.060	July ....	.050	July ....	.060
Oct. ....	.050	Oct. ....	.060	Oct. ....	.070
1845 Jan. ....	.050	1852 Jan. ....	.065	1859 Jan. ....	.100
Apr. ....	.080	Apr. ....	.080	Apr. ....	.100
July ....	.075	July ....	.070	July ....	.070
Oct. ....	.065	Oct. ....	.070	Oct. ....	.085
1846 Jan. ....	.075	1853 Jan. ....	.085	1860 Jan. ....	.100
Apr. ....	.075	Apr. ....	.080	Apr. ....	.110
July ....	.075	July ....	.070	July ....	.075
Oct. ....	.070	Oct. ....	.095	Oct. ....	.100

TABLE 82.—Prices of corn per bushel, at New York, 1840 to 1860.

[Source: Aldrich Report (1893), part 2, p. 7.]

Year and month.	Price.	Year and month.	Price.	Year and month.	Price.
1840 Jan.	\$0.580	1847 Jan.	\$0.810	1854 Jan.	\$0.795
Apr. ....	.565	Apr. ....	.970	Apr. ....	.750
July ....	.545	July ....	.930	July ....	.770
Oct. ....	.585	Oct. ....	.665	Oct. ....	.755
1841 Jan. ....	.570	1848 Jan. ....	.685	1855 Jan.	1.000
Apr. ....	.495	Apr. ....	.530	Apr.	1.000
July ....	.630	July ....	.530	July ....	.895
Oct. ....	.710	Oct. ....	.770	Oct. ....	.860
1842 Jan. ....	.665	1849 Jan. ....	.650	1856 Jan. ....	.925
Apr. ....	.595	Apr. ....	.575	Apr. ....	.640
July ....	.610	July ....	.560	July ....	.515
Oct. ....	.585	Oct. ....	.645	Oct. ....	.685
1843 Jan. ....	.545	1850 Jan. ....	.630	1857 Jan. ....	.680
Apr. ....	.515	Apr. ....	.560	Apr. ....	.690
July ....	.565	July ....	.610	July ....	.845
Oct. ....	.515	Oct. ....	.655	Oct. ....	.700
1844 Jan. ....	.475	1851 Jan. ....	.660	1858 Jan. ....	.600
Apr. ....	.525	Apr. ....	.680	Apr. ....	.690
July ....	.505	July ....	.560	July ....	.730
Oct. ....	.490	Oct. ....	.625	Oct. ....	.715
1845 Jan. ....	.490	1852 Jan. ....	.660	1859 Jan. ....	.790
Apr. ....	.490	Apr. ....	.670	Apr. ....	.895
July ....	.475	July ....	.605	July ....	.820
Oct. ....	.575	Oct. ....	.705	Oct. ....	.920
1846 Jan. ....	.715	1853 Jan. ....	.740	1860 Jan. ....	.890
Apr. ....	.700	Apr. ....	.640	Apr. ....	.705
July ....	.535	July ....	.635	July ....	.630
		Oct. ....	.830	Oct. ....	.690

TABLE 83.—Prices of corn (ear) per bushel, at Cincinnati, 1840 to 1853.

[Source: Aldrich Report (1893), part 2, p. 8.]

Year and month.	Price.	Year and month.	Price.	Year and month.	Price.
1840 Jan.	\$0.31	1845 Jan.	\$0.32	1849 July	\$0.34
Apr. ....	.20	Apr. ....	.34	Oct. ....	.34
July ....	.22	July ....	.34	1850 Jan. ....	.31
Oct. ....	.25	Oct. ....	.36	Apr. ....	.38
1841 Jan. ....	.22	1846 Jan. ....	.34	July ....	.48
Apr. ....	.23	Apr. ....	.31	Oct. ....	.51
July ....	.28	July ....	.25	1851 Jan. ....	.38
Oct. ....	.34	Oct. ....	.23	Apr. ....	.37
1842 Jan. ....	.28	1847 Jan. ....	.21	July ....	.37
Apr. ....	.23	Apr. ....	.40	Oct. ....	.34
July ....	.23	July ....	.41	1852 Jan. ....	.28
Oct. ....	.21	Oct. ....	.31	Apr. ....	.27
1843 Jan. ....	.21	1848 Jan. ....	.31	July ....	.32
1844 Jan. ....	.25	Apr. ....	.26	Oct. ....	.41
Apr. ....	.29	July ....	.30	1853 Jan. ....	.42
July ....	.24	Oct. ....	.28	Apr. ....	.41
Oct. ....	.32	1849 Jan. ....	.28	July ....	.48
		Apr. ....	.26	Oct. ....	.55

TABLE 84.—*Prices of hogs (fair to good packing, live weight) per 100 pounds, at Cincinnati, 1841 to 1860.*[Source: *Aldrich Report* (1893), part 2, p. 27.]

Year and month.	Price.	Year and month.	Price.	Year and month.	Price.
1841 Jan.	\$3.70	1850 Jan.	\$2.90	1856 Jan.	\$5.55
Oct.	3.15	Oct.	3.50	Apr.	4.60
1842 Jan.	2.00	1851 Jan.	4.15	July	5.25
1843 Jan.	1.75	Apr.	3.50	Oct.	5.10
July	1.87	July	3.50	1857 Jan.	6.70
Oct.	2.50	Oct.	3.65	Apr.	6.25
1844 Jan.	2.45	1852 Jan.	4.90	July	5.90
Apr.	2.62	Apr.	5.00	Oct.	6.15
July	2.50	July	5.00	1858 Jan.	4.90
1845 Jan.	3.60	Oct.	5.65	Apr.	4.65
Oct.	4.00	1853 Jan.	6.25	July	3.65
1846 Jan.	4.15	Apr.	5.05	Oct.	4.45
July	1.80	July	4.25	1859 Jan.	6.25
1847 Jan.	3.20	Oct.	6.00	Apr.	6.50
Apr.	4.50	1854 Jan.	4.40	July	5.25
Oct.	4.00	Apr.	4.00	Oct.	4.60
1848 Jan.	2.50	July	3.25	1860 Jan.	6.00
Apr.	2.75	Oct.	3.85	Apr.	5.00
July	2.00	1855 Jan.	4.50	July	3.10
Oct.	3.50	Apr.	4.25	Oct.	5.75
1849 Jan.	3.35	July	4.85		
Oct.	2.25	Oct.	6.00		

TABLE 85.—*Prices of hogs (good to prime, live weight) per 100 pounds, at New York, 1840 to 1860.*[Source: *Aldrich Report* (1893), part 2, p. 28.]

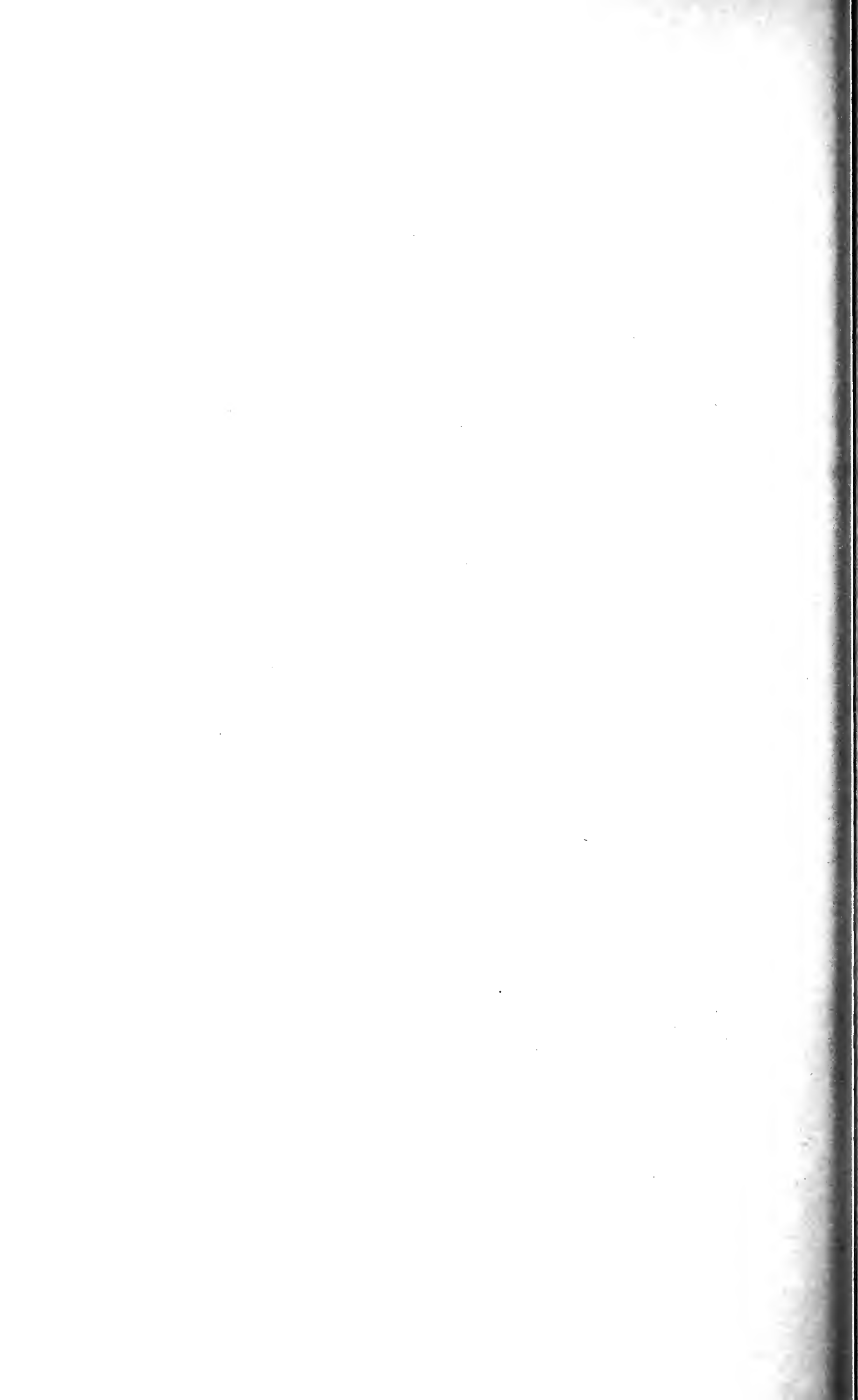
Year and month.	Price.	Year and month.	Price.	Year and month.	Price.
1840 Jan.	\$4.750	1847 Jan.	\$5.375	1854 Apr.	\$5.500
Apr.	4.875	Apr.	5.125	July	4.750
July	4.625	July	5.375	Oct.	5.375
Oct.	3.375	Oct.	5.500	1855 Jan.	5.125
1841 Jan.	4.750	1848 Jan.	5.000	Apr.	5.250
Apr.	4.500	Apr.	6.000	July	5.500
July	5.000	July	4.875	Oct.	6.750
1842 Jan.	4.000	Oct.	4.690	1856 Jan.	6.500
Apr.	4.500	1849 Jan.	4.625	Apr.	6.875
July	4.500	Apr.	5.500	July	6.375
Oct.	3.560	Oct.	4.500	Oct.	6.375
1843 Jan.	3.750	1850 Jan.	4.000	1857 Jan.	6.750
Apr.	4.750	Apr.	4.000	Apr.	7.500
July	4.500	Oct.	4.190	July	6.375
1844 Jan.	4.250	1851 Jan.	4.250	Oct.	6.875
Apr.	4.750	Apr.	5.375	1858 Jan.	5.750
July	5.000	Oct.	4.875	Apr.	6.250
Oct.	4.000	1852 Jan.	4.620	July	4.190
1845 Jan.	3.625	Apr.	5.750	Oct.	4.750
Apr.	4.750	July	5.750	1859 Jan.	5.250
July	4.125	Oct.	5.625	Apr.	5.500
Oct.	3.500	1853 Jan.	6.250	July	6.000
1846 Jan.	4.250	Apr.	7.250	Oct.	5.625
Apr.	5.000	July	5.000	1860 Jan.	5.625
July	4.750	Oct.	5.375	Apr.	6.060
Oct.	4.005	1854 Jan.	5.750	July	6.750
				Oct.	6.690

TABLE 86.—Maple sugar: Production in the United States.

[Source: U. S. censuses, 1840, 1850 and 1860.]

Geographic division and State.	1840.			1850.			1860.		
	Total (1000 lbs.).	Per capita (lbs.).	Per cent.	Total (1000 lbs.).	Per capita (lbs.).	Per cent.	Total (1000 lbs.).	Per capita (lbs.).	Per cent.
United States	34,516	2.0	100.0	34,253	1.5	100.0	40,120	1.3	100.0
Geographic Division:									
New England	6,699	3.0	19.4	8,588	3.1	25.1	13,510	4.3	33.7
Middle Atlantic	12,314	2.7	35.7	12,686	2.2	37.0	13,587	1.8	33.9
East North Central.	11,956	4.1	34.6	10,809	2.4	31.6	10,658	1.5	26.6
West North Central	316	.7	.9	260	.3	.8	832	.4	2.1
New England:									
Maine	258	.5	.7	94	.2	.3	307	.5	.8
New Hampshire ...	1,162	4.1	3.4	1,299	4.1	3.8	2,255	6.9	5.6
Vermont	4,648	15.9	13.5	6,349	20.2	18.5	9,898	31.4	24.7
Massachusetts	579	.8	1.7	795	.8	2.3	1,006	.8	2.5
Rhode Island	^a	.....	.....	^a	.....	.....	.....	.....	.....
Connecticut	52	.2	.1	51	.1	.2	44	.1	.1
Middle Atlantic:									
New York	10,048	4.1	29.1	10,357	3.3	30.2	10,816	2.8	27.0
New Jersey	^a	.....	.....	2	.....	.....	4	.....	.....
Pennsylvania	2,266	1.3	6.6	2,327	1.0	6.8	2,767	1.0	6.9
East North Central:									
Ohio	6,363	4.2	18.4	4,588	2.3	13.4	3,346	1.4	8.3
Indiana	3,728	5.4	10.8	2,921	3.0	8.6	1,542	1.1	3.9
Illinois	400	.9	1.1	249	.3	.7	134	.1	.3
Michigan	1,330	6.3	3.9	2,440	6.1	7.1	4,052	2.3	10.1
Wisconsin	135	4.4	.4	611	2.0	1.8	1,584	2.0	4.0
West North Central:									
Minnesota .....	.....	.....	.....	3	.5	.....	371	2.2	.9
Iowa	41	1.0	.1	78	.4	.3	315	.5	.8
Missouri	275	.7	.8	179	.3	.5	142	.1	.4
Nebraska	^a
Kansas	4

^a Less than 500 pounds.



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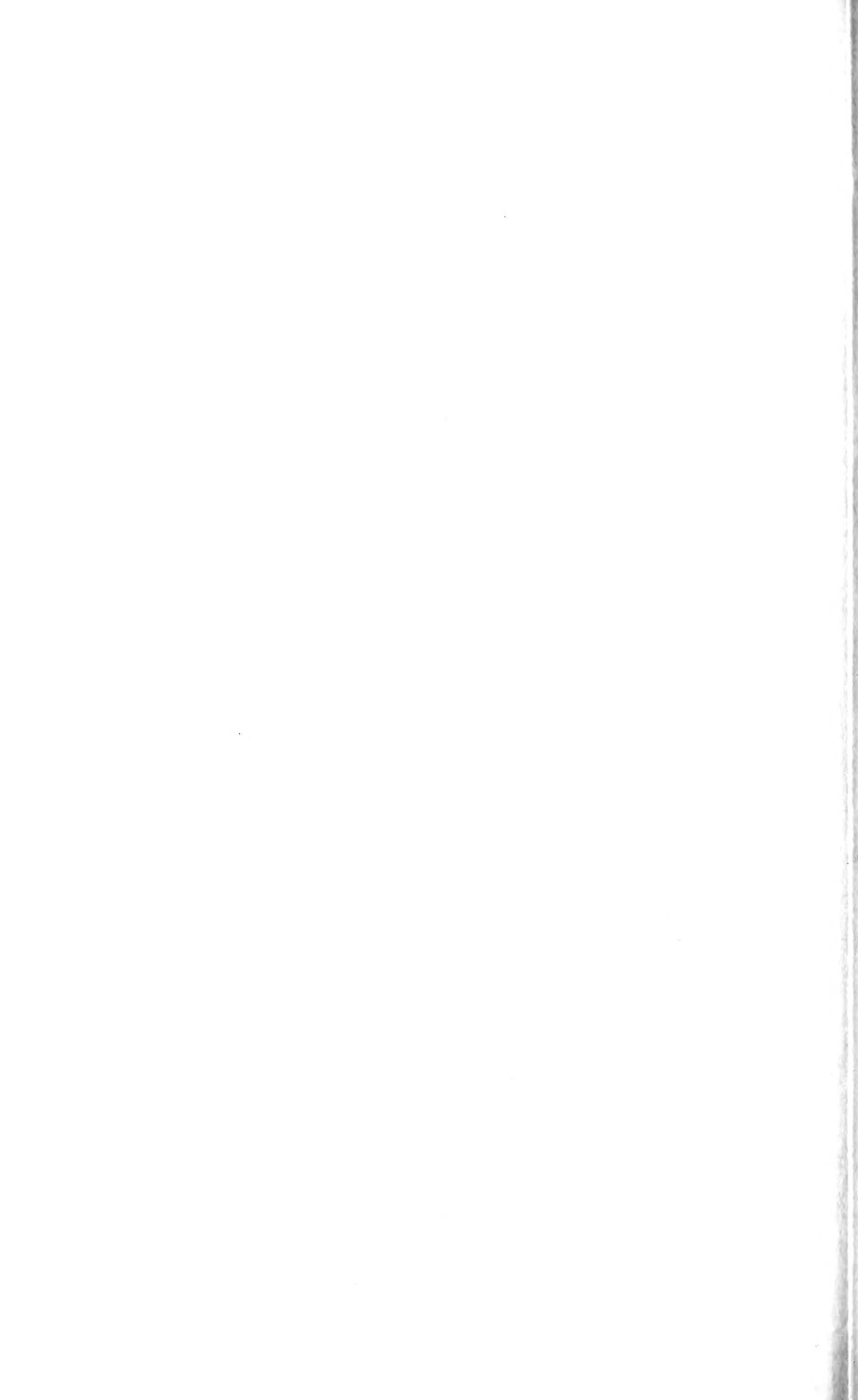
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